NATIONAL PUBLICATION FOR BUYING-USING-SELLING COMPUTER HARDWARE & SOFTWARE

COMPUTER SHOPPER®

OCTOBER 1986
VOL. 6 NO. 10
ISSUE 81
$2.50
02927
Canada $3.25

MONEY SAVING ADS & ARTICLES

LONG AWAITED COCO 3

Tandy Takes Off

New Tandy Computers PC/XT/AT Compatible

Don't Risk The Unknown
Brand Name Diskettes at the Lowest Prices!
Disk World! See Ad Index!

30MB ST4038 AT 589.00 DEALER
Proto PC, Inc. 612-644-4660

American Semiconductor
Computers, Components, Hardware and Software
TURBO XT $399!
256K...$1.99!
1-800-237-5758

America's Mailorder Headquarters
Lyco Computer
World's Leader in Sales and Service
See Pages 12 & 13

PRINTERS Plus
800-562-2727

150ns 256K $2.93 Qty one 8/24/86 RAM
HIGH QUALITY PARTS
PROMPT DELIVERY
Microprocessors Unlimited, Inc.
(918) 267-4961
Please See Page 123

BEST PRICES - BEST PRODUCTS - BEST SERVICE
MidWest Micro-Peripherals
1-800-423-8215
12 FULL PAGES OF SAVINGS
SEE AD INDEX

39¢ Diskettes
See ad index for full page ad
Communications Electronics Inc. 800-USA-DISK

70% OFF! Most Items BCE
LOOK FOR THE RED PAGES
SEE AD INDEX

Prices Slashed! Premium Quality! Lifetime Warranty!
DISKS For Apple from 29¢ SS/DD-40tk from 33¢ DS/DD from 35¢
UNITECH (800)343-0472 IN MASS (617)"UNI-TECH" see ad index

brother® PRINTER INVENTORY REDUCTION

SAVE WITH CONFIDENCE – CALL MIDWEST MICRO

NO TAX CHARGED TO RESIDENTS OUTSIDE OHIO
SAME DAY SHIPPING ON ALL ITEMS IN STOCK
TECHNICAL SUPPORT

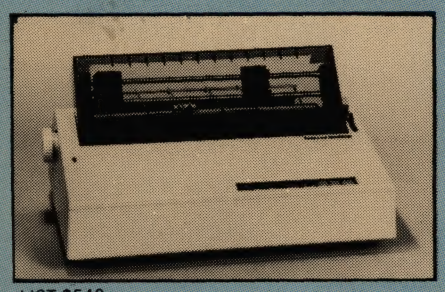
PRICE GUARANTEE
We at MidWest Micro guarantee that we can save you up to 69% or more on your purchase of new fully warranteed equipment and supplies. And we will still give you friendly, courteous service. Call today and Save With Confidence!

ONE CALL SHOPPING TOLL FREE
DEALERS CALL
800-528-4504

brother®

Get the affordable daisywheel printer alone in its class with. . .

brother HR-15XL DAISYWHEEL PRINTER



LIST $549

Printer Sale

Just **$299**

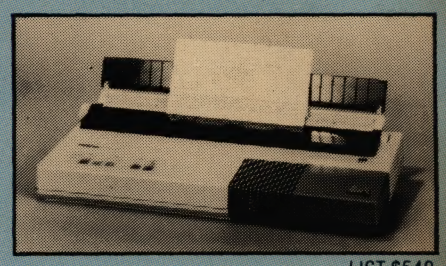
- Bi-Directional 17CPS
- 3 K Memory Buffer
- Black & Red Printing
- Parallel or Serial Interface
- Typewriter Keyboard Available

Printout quality need not be sacrificed simply because of cost. Not only does the HR-15XL give you daisywheel printing at a price that's unbeatable, but added built-in attractions such as a 3k memory buffer (5k optional) for smoother printing and text reprinting to reproduce originals comes standard. Remarkable features such as two color printing and shadow printing gives your letters that added touch of importance. To increase the versatility of the HR-15XL, **brother** has an optional KB-50 Human Engineered typewriter keyboard to turn your HR-15XL into an electronic typewriter with automatic correction capability. Since the HR-15XL is a result of **brother's** advanced technology gained by long years of experience in the electronic office machine field it embodies such welcomed features as bi-directional 17cps printing, proportional spacing, automatic underlining, and super and sub script capability. Supplied either with Centronics parallel or RS-232C interface, the HR-15XL is compatible with most all small computers available on the market. Such options as the cut sheet feeder and tractor feeder offer further versatility to the HR-15XL — in a class way ahead of the rest.

Our choice as the best business printer buy in the U.S. . . .

brother® M-1509

$Call$ For Special Sale Price



LIST $549

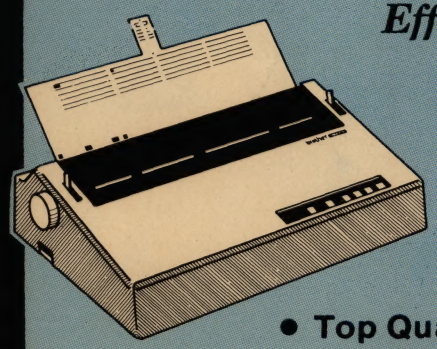
- 180 CPS
- 45 CPS In NLQ
- Wide 15.5" Paper Handling
- Epson FX and IBM Compatibility
- Both Parallel & Serial Interfaces

The **brother** M-1509 is a dot matrix printer designed to offer reliability, economy, and quiet, easy operation to users of personal or small business computers. Normal print speed is a fast 180 cps (pica), but the M-1509 also provides handsome Near Letter Quality printing at 45 cps. A variety of character sets are available, and the high-density bit image capability produces impressive graphics.

The M-1509 also incorporates a number of cost- and labor-saving features. The large memory buffer releases the computer for other tasks while printing, an optional cut sheet feeder reduces paper-handling time, and the one-inch paper cut function economizes on paper. In addition, the M-1509 is supplied with character sets and control codes compatible with those of the IBM PC and the Epson FX series printers, for easy interfacing with a broad range of computer equipment.

Above all, the M-1509 is designed for people. It is exceptionally slim and light, with conveniently consolidated controls, allowing it to fit easily into a fully-equipped work station without wasting either office space or valuable operator time. It is also quiet – a fact which, though often overlooked, is of crucial importance in maintaining an efficient, industrious office environment.

Make Your Office Beautifully Efficient With. . .



brother HR-25 *and* HR-35 DAISYWHEEL PRINTER

LOW AS **$499**

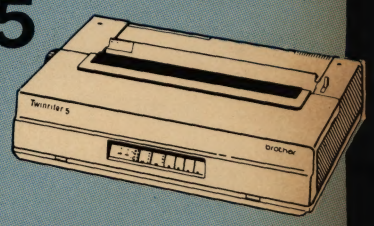
LIST $749 & $1095

- Top Quality Print
- Triple Pitch
- Fast 23 to 36 CPS Speed
- Black & Red Printing
- Unsurpassed Reliability

Get Two Printers In One With. . .

brother Twinrlter5

$Call and Save HUNDREDS!



LIST $1295

Get The First Printer in the World to Offer Both Daisywheel and Dot Matrix Printing

- 36 CPS Letter Quality
- Saves Space
- 140 CPS Dot Matrix Draft
- True Letter Quality and Graphics on the Same Line
- Economical, Compact, Versatile

brother®
PRINTER AND TYPEWRITER SUPPLIES

Dealers & VARS
Let us help you maximize your profits and minimize your inventory costs. Our exciting prices and delivery schedules along with renowned Brother quality will make your bottom line look great. Call 800-528-4504. In Ohio Call 800-528-222-6571.

VISA MasterCard AMERICAN EXPRESS
For your protection we check thoroughly for stolen credit cards.

CALL TOLL FREE FOR INFORMATION OR ORDER
(800) 423-8215
IN OHIO CALL - (800) 321-7731 • DEALERS CALL - (800) 528-4504
OHIO DEALERS CALL (800) 222-6571
HOTLINE: 513-663-4992 (For Technical Assistance or Information on Your Order)

MONDAY-FRIDAY
9 AM - 6 PM (EST)
CLOSED SATURDAY
PRICES SUBJECT TO CHANGE
AVAILABILITY AND TYPE ERRORS

MidWest Micro-Peripherals

135 S. Springfield St., Saint Paris, Ohio 43072

MEMBER DIRECT MARKETING ASSOCIATION

All equipment shipped factory fresh with manufacturers warranty

HIGH TECHNOLOGY — NOT HIGH PRICES

LATEST AND GREATEST PRINTER

SAVE WITH CONFIDENCE – CALL MIDWEST MICRO

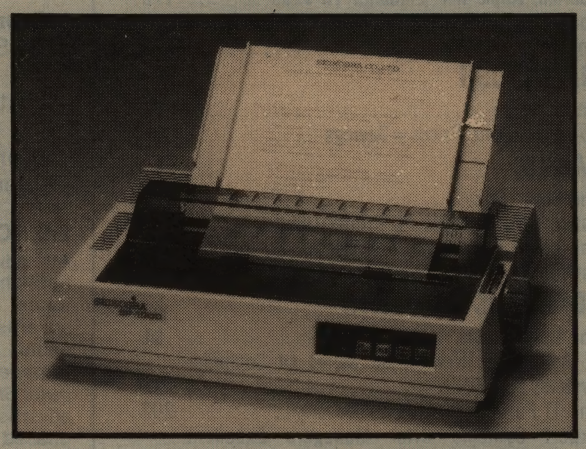
NO TAX CHARGED TO RESIDENTS OUTSIDE OHIO
SAME DAY SHIPPING ON ALL ITEMS IN STOCK
TECHNICAL SUPPORT

PRICE GUARANTEE
We at MidWest Micro will try to beat any competitor's legitimate delivered price on in-stock Seikosha SP1000 printers. Call today and save with confidence!

ONE CALL SHOPPING TOLL FREE
DEALERS CALL
800-528-4504

Get Advanced Technology and Craftsmanship with. . .

SEIKOSHA SP-1000 PRINTER



2 YEAR FACTORY WARRANTY

Low As $179

PRINTOUT SAMPLE

```
789:;<=>?@ABCDEF
<=>?@ABCDEFGHIJKLM
789:;<=>?@ABCDEFGHI
/0123456789:;<=>?@ABCDEFGHI
789:;<=>?@ABCDEF
<=>?@ABCDEFGHIJKLM
789:;<=>?@ABCDEFGHI
EFGHIJKL
789:;<=>?@ABCD EFGHIJKLMNOPQ
```

SUGGESTED LIST $349.

In order to keep your loyalty we at MidWest Micro are always looking for more printer and less price. In that search we've found for you a real gem in the price/performance arena. The Seikosha SP-1000 is made with the same precision and durability you have come to expect from the quality leader in the watch industry – Seiko.

The SP-1000 is completely full featured with the latest advances incorporated. It provides excellent near letter quality printing with a dense 24 by 18 dot density. This equates to 41,472 addressable dots per inch and gives superb "typewriter like" printing. Other printers with resolution this high cost hundreds of dollars more.

With the SP-1000 your computer can print 40, 48, 68, 80 or 136 characters per line. It can print 35 separate character styles including 13 double width and 3 reversed styles. You get Pica, Elite, Condensed and Italics – plus true superscripts and subscripts. All this can be done automatically, through easy commands right from your keyboard.

You get all these great features plus much, much more with the SP-1000 and there is a model made to fit your application. (This saves further in interfacing costs and problems). So call today to order or ask for a free brochure and print sample.

SP-1000 Series

	Your Price
• **SP-1000A,** Centronics parallel	$199
• **SP-1000AS,** RS-232 serial version	199
• **SP-1000 I,** IBM® PC compatible	199
• **SP-1000VC,** Commodore® C-64/C-128™ compatible	179
• **SP-1000AP,** Apple® IIC/Macintosh™ compatible	199

Please send me a 20 page PREFERRED CUSTOMER CATALOG. I am enclosing $1.00 and understand that a coupon for $2.00 off my purchase is enclosed in this special catalog.

Name _____
Address _____
City _____ State _____ Zip _____

Features

- Impact dot matrix method, bi-directional in logic seeking, undirectional in graphic printing.
- 100 (Draft mode), 20 cps (Near Letter Quality) print speed, with reduced noise level.
- Adjustable tractor and friction feed standard.
- Automatic paper loading function.
- Paper empty detection.
- Input data dump in hexadecimal.
- Right, left margin set function.
- Self test printing.
- A variety of functions including Underline, Bold print, Double striking.
- A variety of print character sets including Pica, Elite, Proportional, Elongated, Condensed, Italics, Super/Subscripts, and Italic Super/Subscripts.
- Automatic printing.
- Epson FX compatibility (A & AS models).
- Quality craftsmanship from the same parent company as Epson Printers and Seiko watches.
- Backed by the best warranty in the business. (2 full years with service centers throughout the U.S.)
- Standard 1.5K buffer.

Character Font			Character Structure (H x V + Space)	Maximum Column Number	Character Spacing (Character/Inch)	Print Speed (Character/Second)
Standard Character	Standard	Pica	*12x9	80	10	100
		Elite	*12x9	96	12	50
		Condensed	*14x9	137	17	70
	Near Letter Quality	Pica	*24x18	80	10	20
		Elite	*12x18	96	12	24
Italic Cursive Character	Standard	Pica	*16x9	80	10	100
		Elite	*16x9	96	12	50
		Condensed	*18x9	137	17	70
	Near Letter Quality	Pica	*32x18	80	10	20
		Elite	*32x18	96	12	24
Graphic	Single Density Graphic		nx8	480 dot column	—	600 dot column
	Double Density Graphic		nx8	960 dot column	—	490 dot column
	Double Speed, Double Density Graphic		nx8	*960 dot column	—	600 dot column
	Quadruple Density Graphic		nx8	*1920 dot column	—	*980 dot column
	640 Dot Graphic		nx8	640 dot column	—	326 dot column
	576 Dot Graphic		nx8	576 dot column	—	294 dot column
	720 Dot Graphic		nx8	720 dot column	—	367 dot column

*Indicates that the specified figure includes half dots.

Dealers – Call 800-528-4504 for prices that will improve your sales volume and your profit margins.

VISA MasterCard AMERICAN EXPRESS
For your protection we check thoroughly for stolen credit cards.

CALL TOLL FREE FOR INFORMATION OR ORDER
(800) 423-8215
IN OHIO CALL - (800) 321-7731 • DEALERS CALL - (800) 528-4504
OHIO DEALERS CALL (800) 222-6571
HOTLINE: 513-663-4992 (For Technical Assistance or Information on Your Order)

MONDAY-FRIDAY
9 AM - 6 PM (EST)
CLOSED SATURDAY
PRICES SUBJECT TO CHANGE
AVAILABILITY AND TYPE ERRORS

MidWest Micro-Peripherals

135 S. Springfield St., Saint Paris, Ohio 43072

MEMBER DIRECT MARKETING ASSOCIATION

All equipment shipped factory fresh with manufacturers warranty

HIGH TECHNOLOGY — NOT HIGH PRICES

COMPUTER SHOPPER™

TABLE OF CONTENTS

Tandy Takes Off

ARTICLES
Tandy Takes Off 7
Where Is The Mainstream Going? 9
Radio Shack And The Business Market 10
Echo Off Writing Batch Files 54

TANDY
Tandy Corporation Introduces New Color Computer 3 69
Something New For The Classroom From Ft. Worth 69
TRS-80 Video Tape Tracker—A Review 70

IBM-MS DOS
Accounting Partner II 71
Tornado Notes: A Product Which May Knock You Over 72
SWAP PORTS—A Parallel Printer Utility 72
dFlow—A dBase Utility Program 107
Computer XT The Generic (Brand-X) 110
Incompatibilities—BIOS Chip and Video Card .. 115
Video Cards 115
Disknote: Another Kind of Notes Program 116
BASIC Is Spoken Here 117
dBASE III CONFIG.DB 126
Voice-Communication Product For HP Vectra .. 131
PC CAD Gives Architectural Firm A Competitive Edge 132
Amdek New Model 1280 Monochrome Graphics Display Subsystem 133
Lotus Announces Maintenance Releases Of 1-2-3 Release 2 134
Color Commander: Push Button Color Control .. 135
BASMER and BASCMP Utilities for BASIC Programmers 138
New Enhanced Graphics Adapter With I/O Capabilities 169
Leading Edge Announces 2400 Baud Modem for $289 174
AST Research Premium Expanded Memory/ Multifunction Board for PC/AT 174
Wells American A*Star Multi-User Computer ... 192

COMMODORE
C-128 Info for CP/M Enthusiasts 75
The Amiga Workbench 75
Deluxe Video For Amiga 76
Cadpak 64 & 128 for Commodore Graphics ... 76
32 Bit Turbo—Amiga Workstation Beats VAX 11/780 146

ATARI ST
Hacking The ST 77
3.5-Inch 20MB SupraDrive for Atari ST Computers 77
Atari And Microsoft to Offer "Microsoft Write" For Atari ST 77
A-CALC A GEM Based Spreadsheet For The Atari ST 78
Maps & Legends And A Database, Too 152
Flash 153
CAD-3D: A New Dimension for the Atari ST ... 154

ATARI
XLENT Software's Typesetter 79
Applying The Atari 80

APPLE
Ask The Guru 83
Apple CP/M Column—Woz Graduates! 83
The Next Generation of Apples 84
Legend Industries Introduces 1 Meg RAMcard for Apple IIC 178
Spartan, Apple II+ Emulator To $299 178
CompuServe Releases "B" Protocol to the Public Domain 179

MACINTOSH
MacUniverse 85
Lower Gasoline Prices=$avings 85

SANYO
The Silver Box 87
Sanyo MBC 55X/IBM PC Printer Utilities 87
The Zobex Hard Disk Controller 88
Sanyo/IBM BASIC Programmer's Toolkit 197

TEXAS INSTRUMENTS
The Inner Limits 91
TI Announces New 32-Bit Series Of Computer Systems 92
The TI Forum 200
Expert Systems Offer Managers Excellent Risk/Reward Ratios 202

TIMEX SINCLAIR
Sinclair Survival Column 93

COMPUTER BOOKS
Top 10 Computer Book List—October 1986 ... 97
Book Review The Hackers Handbook 97
The IBM PC (And Compatibles) Free Software Catalog And Directory 97
Book Review The Trapdoor 97

HEATH/ZENITH
Expansion for Z-138, Z-148 Using Ampro 186 Little Board And KJT Expansion Chassis 99
The Zenith 151 PC & RGB Monitor Timing Problems 99
Bridging The Gap: CP/M to C-64 Text File Transfer 100
WHMT—Enhanced Write-Hand-Man for the H/Z-89 213

MISCELLANEOUS
Artificial Intelligence And The 80386 Microprocessor 101
Fill The Hangar With New Flight Simulators ... 101
Borland International Introduces New Version of Turbo Tutor 102
The Comal Corner 186
Design Your Own Printer Characters 206
HP Introduces DraftPro Plotter 93
Borland Beefs Up Turbo Pascal; Bundles In Options At $99.95 94
Tech Note: In Praise Of The Ziploc Sandwich Bag 98
Who Says CP/M Is Dead? 98

OTHER
Coming Events ..... 225, 226 & 227
Users Groups ..... 260 & 262
Bulletin Board ..... 264, 266 & 268
Showcase ..... 270, 272, 274, 276 & 278
Classifieds 279
Advertiser Index 8
Service Directory 300

THINGS TO COME

- "Hands On" Review of Wells American & Epson Equity III AT-Clones
- Detailed Technical Report On New Apple Computers
- Spotlight On Business—Lawyer's Software

COMPUTER SHOPPER™

Computer Shopper (ISSN 0886-0556) is published monthly for $21 per year by *Computer Shopper of Titusville, Inc.*, 407 S. Washington Ave., Titusville, FL 32796. Second-class postage paid at Titusville, FL and additional mailing offices. POSTMASTER: Send address changes to *COMPUTER SHOPPER*, P.O. Box 1419, Titusville, FL 32781.

Entire Contents Copyright © 1986 *Computer Shopper of Titusville, Inc.* — All rights reserved.

Subscription $21 Per Year

(USA Only)
***Computer Shopper*, Inc.**
407 S. Washington Ave.,
P.O. Box F
Titusville, FL 32781
(305) 269-3211
Source ID No.: TCS575
Compuserve No. 70275,1023

NOTICE TO ADVERTISERS

All advertising is subject to Publisher's approval and acceptance without recourse. The advertising herein that is typeset and/or designed by *Computer Shopper*, is the property of *Computer Shopper* and not that of the advertiser. The advertiser has purchased the right of reproduction in *Computer Shopper* only and does not have the right to reproduce the ad in any other place of publication. **We are not responsible for mistakes, misprints, or typographical errors and will not issue credits of any kind for such errors.** Advertisers and their agencies assume responsibility for the condition of the contents of advertising printed, and agree to indemnify the Publisher of *Computer Shopper* for any and all claims and expenses arising therefrom. *Computer Shopper* standards suggest to the advertiser that statements concerning shipping and handling charges, warranties and money/or no money back guaranties should be stated in all forms of advertising within *Computer Shopper*. The opinions expressed in the articles and ads are those of the writer and not necessarily those of *Computer Shopper*.

PUBLISHER'S POSITION ON HONESTY

We guarantee that all ads meeting our ad policies will be published. There is no "skimming" bargains off the top or letting anyone preview the ads of the next issue.

We have expended much time, effort and money with the ultimate goal of providing subscribers with a nationwide ad service for the lowest possible cost. In reciprocation, we would expect you to conduct your transactions fairly, honestly and in the same manner as you would expect others to deal with you.

There are a few people who appear unable to go through life without having a hassle over every deal they encounter. If you are this type of person, we prefer not to handle your ad business.

We will not knowingly publish a classified or commercial ad of which we have information that the individual or firm is not reputable and fair. If you answer an ad within *Computer Shopper* and encounter dishonest treatment, please let us know. If there are several legitimate complaints, we will refuse future advertising and if a subscriber, cancel their subscription.

GLENN E. PATCH
Chairman of the Board

FOUNDER—Glenn E. Patch
GROUP PUBLISHER—Richard Govatski
PUBLISHER—Linda Rew
ASSOCIATE PUBLISHER—Stan Veit
EDITORIAL
EDITOR-IN-CHIEF—Stan Veit
ASSOCIATE EDITOR
John Anderson
ASSISTANT EDITOR—Annda Kinsey
EDITORIAL ASSISTANT
Rose Restina
CONTRIBUTORS
Dr. Ron Albright, Richard Fujita
Lon Andrews, Randy Holcomb
Jeff Brenner, Tim Knight
Phillip Chien, Don Lancaster
Ted Drude, Cheryl Peterson
Mark Fendrick, Wynn Rostek
Rich Fields, Les Solomon
Andrew Fried
Johnathan Zittrain
Dr. Michael W. Ecker
Barbara & John McMullen
ART STAFF
CREATIVE DIRECTOR
William Hutto, Jr.
ART DIRECTOR—Debi Hartling
ASSOCIATE DESIGNER
Wendy LaPinta
ART ASSOCIATE—Mike Lawhon
PRODUCTION
ADVERTISING PRODUCTION COORDINATOR
Sam Batts
ADVERTISING PRODUCTION ASST.
Nancy Altman
PRODUCTION MANAGER
Bernard Monroe
ASSISTANT PRODUCTION MANAGERS
Debi Hartling, Mary McDonel
COPY EDITING
Charlotte Barbour, Bonita Paulk
COMPOSITORS
Patti Dixon, Pamela Dowdy
Vicky Hamilton
ADVERTISING SALES
ADVERTISING SALES DIRECTOR
Mark Evans
ACCOUNT EXECUTIVES
Lawrence Morrissette
Gary Liput, Ken Wood
Bob Harper, LaNeal Daniel
Theresa Brown, Debby Eddins
CIRCULATION
DIRECTOR—Rosemary E. White
DIRECTOR, SINGLE COPY SALES
James Gerth
ADMINISTRATIVE ASSISTANT
Lori Conway
FULFILLMENT COORDINATOR
Pat Irelan
MARKETING AND RESEARCH
DIRECTOR OF MARKETING
Lawrence A. Morrissette
RESEARCH ANALYST
Brett Alexander
ADMINISTRATIVE ASSISTANT
Robin Bowen

patch publications
CORPORATE STAFF
CHAIRMAN—Glenn E. Patch
PRESIDENT/C. E. O.
Michael F. Billings
VICE PRESIDENT/C. F. O.
Donald F. Welk
ASSISTANT TO PRESIDENT
Karen Sacik
COMPUTER OPERATIONS MANAGER
Dan Wade
DIRECTOR HUMAN RESOURCES
Kathy Miller
ACCOUNTING MANAGER
Beverly Ryan
CREDIT MANAGER
Eileen McCullough
CUSTOMER SERVICE REPRESENTATIVE
Sherry Allison

ZENITH

ZENITH-148 PC
PANASONIC
KX-P1091
MONITOR, CABLE.

Z-148, 2-360K drives, 256k ram, expansion to 640k, serial and parallel interface, RGB/composite ports, MS-DOS, GW BASIC, ONE YEAR WARRANTY.
KX-P1091, 120 cps dot matrix printer, 10 inch paper width capacity, rear tractor feed and friction feed.
TWO YEAR WARRANTY ON PARTS AND PRINTHEAD.

Enjoy personal computing with two top of the line brand names on the market. Zenith speed and Panasonic realibility teem up to offer you unmatched quality and performance, that make these machines front runners.

Complete system
ready to operate with green or amber moniter $1399
Zenith Z-158 1809
Zenith Z-200-41 2899
Zenith Z-171 Laptop 1729

PRINTERS

OLYMPIA. Compact 2 349
Juki 6100 389
Juki 6300 699
Silver Reed EXP550 409
All Okidata ..... CALL
Citizen MSP Series ..... CALL
Diablo D-25 549
DataProducts 1152 1179
All NEC Printers ..... CALL
Panasonic ..... CALL

360 K-DRIVER 115

Hard Driver ..... CALL
Altos General
Ledger 1.0 ..... $400

MODEMS

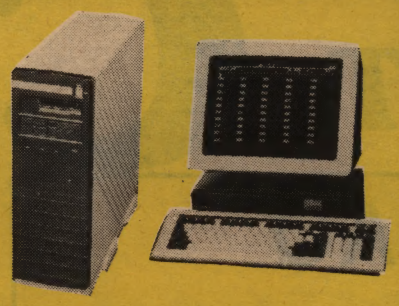
USR Password 1200 ..... $219
USR Courier 2400 429
Hayes 300/1200 399
Prometheus ..... CALL
Racal Vadic ..... CALL
Anchor Express 309
Volksmodem 300/1200 199
CTS 1200 159
Avatek 1200 159

MASS STORAGE

I·MEGA

10 MB Bernoulli Box $1859
10 × MB Bernoulli Box 2499
New 20 MB Single B-Box 2299
20 × 20 3358

ALTOS MULTI USER SYSTEMS



Altos 2086-2 ..... $14599
Altos 1086-T-80 13399
Altos 986-T-80 10799
Altos 486-20 4150
Altos 586 Series ..... CALL
Altos Software ..... CALL

PLOTTERS — houston instrument — PLOTTERS

DMP-29 ..... $1750
CMP-41/42 2499
DMP-51/52 3799
DMP-51/52 MP 5099
DMP-40 950
True Grid Series ..... CALL

Roland DXY-101 599
Roland DXY-880 979
Roland DXY-980 1279
Calcomp 1043 GT 8299
Calcomp 1044 GT 13499
Platter Software ..... CALL
Ioline ..... CALL

CALL FOR AUTO CAD AND VERSA CAD

DIGITIZERS

Kurta ..... CALL
Hitachi ..... CALL

CALL FOR SOFTWARE
ALL SOFTWARE SALES FINAL

TERMINALS / MONITORS

Wyse WY-60 Terminal $419
Wyse WY-50 Terminal 449
Wyse WY-30 Terminal 319
Qume QVT-101 Terminal 298
Qume QVT-101A Amber 325
Amdek 300A Amber Monitor ... 139
Sakata Monitor (Green) 99
Samsung TTL $88
Amdek 600 Hi Res RGB 409
Sanyo CRT-30 Green 59
NEC Multisync 615
Zenith ZVM-1330 485
Swivelview Monitor Stand 18

HEWLETT PACKARD ..... CALL

CANON LASER PRINTERS ..... CALL

—Since 1980—

Scottsdale Systems

617 N. Scottsdale Rd., Scottsdale, AZ 85257

(602) 941-5856
For Inquiries

1-800-367-2369
Toll Free - For Orders

VISA · master charge · AMERICAN EXPRESS

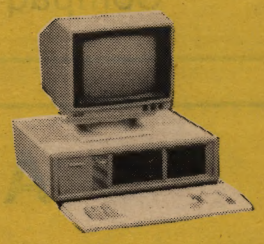
Prices listed are for cash/MasterCard and Visa add 3%/American Express add 5%/AZ residents add 6% tax/all items are new with manufacturer's warranty/Returned product subject to 20% restocking fee/Personal and company checks take up to 3 weeks to clear/No COD's or APO's/Prices and specifications subject to change/Product subject to availability/all applicable trademarks recognized and on file.

WYSE TELEVIDEO TELECAT-286

FEATURES
- 8-MHz Intel 80286 processor
- 512-Kbytes RAM
- Sockets for 1-Mbyte On-Board RAM
- Five Expansion I/O Slots
- 20-Mbyte Fixed Disk Drive
- 1.2-Mbyte Diskette Drive
- Serial and Parallel Ports
- Keyboard with LEDs
- Connects to Personal Mini Network
- Runs MS-DOS 3.1
- Clock/Calendar with Battery Backup
- High-Resolution Video Monitor Standard

$2399

SANYO TURBO FOX 885



IBM-PC Compatibility ■ 256K
8088-2 CPU at 4.77 and 8 MHZ
Mono Monitor ■ 2 DSDD Drives

TurboFox $1299
Star Pack Software 89

THE XEROX 4045 LASER CP

The Xerox 4045 Laser CP Combines a wide array of features never before available in a compact laser printer. It offers powerful features available on Xerox top-of-the-line laser printers, including emulation modes that allow you to print most Diable 630 and Xerox 2700-II applications.

The Xerox 4045 Laser CP ... $4429
Custom Cable $35

EAST COAST

COMPAQ

PORTABLE II MODEL 2 ..... $2599
256K, dual 360K floppies, parallel port, 9" monochrome text/graphics monitor

PORTABLE II MODEL 4 ..... $3599
640K, 20MB hard drive, 360K floppy, 9" monochrome text/graphics monitor parallel port

PORTABLE 286 MODEL 2 ..... $3999
640K, 20MB hard drive, 1.2mg floppy 9" monochrome text/graphics monitor

DESKPRO 286 MODEL 2 ..... $3649
512K, 1.2mg floppy, 30mg hard drive

1/2 PRICE

Compaq Amber or Green Monitor
With Every Deskpro Purchased
* All systems listed 100%
Compaq Components

AT&T

AT&T DUAL DRIVE SYSTEM $1899
dual 360K floppies, 640K, high resolution text/graphics monochrome monitor, parallel/serial port, DOS

AT&T 6300 HARD DRIVE SYSTEM $2799
640K, 360K floppy, 20MB hard drive, parallel/serial port, high resolution color monitor, DOS

* All systems listed 100% AT&T Components

CALL FOR LOWEST PRICING ON CUSTOM CONFIGURED IBM PC, XT AND AT SYSTEMS

PRINTERS

NEC 3550 ..... $899
NEC P5 ..... $1099
NEC P5 XL $1249
NEC P6 ..... $519
Brother HR15 XL letter quality $429
Epson ..... Call
FX85, FX286, LQ1000, DX35-4201

HARD DRIVES

Seagate 20MB w/controller $479
Seagate 30MB w/controller $549
Seagate 40MB for AT $829
Hard card by Plus 10 mg $589
Hard card by Plus 20 mg $699
Bernoulli 10 + 10 ..... $1949
Bernoulli 20 + 20 ..... $2549

TAPES

Irwin 10 mg Internal $519
Irwin 20 mg Internal AT $629
Irwin 20 mg External AT $769

COMPATIBLES

Monochrome card w/parallel port $89
IBM compatible mono/graphics card $109
IBM compatible color/graphics card $99
IBM compatible EGA card $379
Hayes 1200B compatible internal modem . $159
US Robotics 2400 internal $449
Multi-function 0-384K par/ser port-clk/cal-OK $99

MONITORS

Amdek 310A ..... $159 **Amdek** Color 600 . $409
PGS MAX12E ..... $159 **PGS** HX12 ..... $449

DBASE III—FRAMEWORK—R BASE 5000—LOTUS—MULTIMATE—WORD PERFECT—WORDSTAR

EXTENDED WARRANTY SERVICE CONTRACTS AVAILABLE

1-914-776-1707
815 McLean Ave., Yonkers, NY

1-412-733-7978
Pittsburgh, PA

1-404-924-3488
1103 Alabama Rd., Ackworth, GA

Prices and Products subject to change without notice.

NY Residents add Sales Tax.
Shipping Additional

Tandy Takes Off

by Barbara E. & John McMullen

On July 30th, approximately 9 years after its introduction of the original TRS-80 Model 1, Tandy, Radio Shack introduced 5 new computers. Although the new units include a new version of the popular "CoCo," the color computer 3, the majority of Tandy's introductory presentation at New York's Waldoff-Astoria focused on the four MS-DOS machines which Tandy feels place them at the forefront of suppliers of high value PC "clones" (Tandy stresses that it competes on "value" rather than on "price" and makes the distinction that it provides the full range of features required by PC users at highly affordable prices.)

In his introductory remarks, John Roach, Chairman & CEO of Tandy, pointed out that he had formerly referred to 1986 as the "Year of the PC-Compatible" and stated that the new entries from Tandy add a new dimension to the term "PC-Compatible" in that they provide very high value PC compatibility from an American corporation that stands behind its products with full service through over 7,000 retail outlets. He also emphasized that these systems continue to demonstrate Tandy's intent to serve all segments of computer users including the home market which other firms have written off as non existent.

The four PC-compatibles to which Roach and his staff referred are in actuality replacements for the existing Tandy 1000 and 3000 models (additionally, they spell the end of the Tandy 1200). In replacing these two systems, Tandy has split each product into two new units, each with separate strengths representing the particular market segment which the new system is intended to address.

In the case of the Tandy 1000, the replacement units, the Models 1000 EX & 1000 SX are aimed at two clearly different markets. The EX priced at $799 addresses the educational and home segments and is, in its entry model, a 7.16 Mhz switchable to 4.77 Mhz (the IBM PC speed) clock 8088 based 256k MS-DOS unit packaged in a single box containing computer, keyboard, internal 360k 5¼ "floppy" disk drive, ports for composite & RGB video, external 5¼" and 3½" disk drives, joysticks and headphones. The system is expandable to 640k of RAM and Tandy markets expansion devices for such memory expansion as well as RS-232C option card ($79.95), Monitors (Monochrome—$129.95; RGB—$299.95 & $459.95), Mouse Controller with Calendar ($99.95), Modems (300 Baud—$99.95; 1200 Baud— $199.95) and LAN Network 4 interface ($299.95) for the system. Additionally, there is a new operating environment "Personal Deskmate" which provides "Mac-like" pull-down menus for management of text and program files. Deskmate also contains simple word processing, filing & spreadsheet functions and desktop utilities for calendar, communications management, graphics editing, note taking and calculator functions. It is bundled with the system. (The intent of this bundling is to make the machine immediately usable to the new purchaser—a feature that Tandy feels is essential to the cultivation of the home market.)

Roach feels that the 1000 EX will be the vehicle that finally moves the educational market to the MS-DOS standard. In response to a question relating to the continued preeminence of Apple in the education field, Roach said, "The reason that schools systems have not moved as businesses have to the MS-DOS standard has been the high cost of converting to PCs. The 1000 EX removes that impediment and provides the power schools need at an attractive price. Add the fact that it is supported by a major US company and manufactured in the United States. The 1000 EX delivers the answers to the needs of school systems." (Later in the discussion, Roach expanded on the "made in the US" point saying, "We can offer value at these prices because of the efficiencies of our automated production systems. Our production process is the most cost effective in the United States, perhaps in the world." The four new PC compatible machines are produced in the US while the new Color Computer is manufactured in Asia.)

New Tandy 1000 EX

The Tandy 1000 SX, intended for the business community, is also a 7.16 Mhz 8088 machine containing 384k (expandable to 640k), two 5¼" 360k floppy disk drives and 5 10" PC-compatible expansion card slots and retails for $1,199.00. MS-DOS 3.2 and "Deskmate II" a six-in-one applications program is included with the 1000 SX. Roach feels that the expanded speed and memory wrapped in a low-cost computer answers the primary requirements of the small business market—"The Tandy 1000 SX computer meets these needs and is the logical successor to the popular Tandy 1000—the best selling PC-compatible in U.S. retail sales."

In developing systems to replace the present 3000 computer, Tandy went in two sharply divergent directions. Although both the 3000 HL and 3000 HD are 80286 based, the HL is, in fact, a PC-XT compatible while the HD is a true "AT-clone." In developing an XT-compatible which runs four times faster (with a switchable 4/8 Mhz clock) than the XT, Tandy feels it has pro-

continued on page 9

Tandy 1000 SX

Tandy 3000 HD

ADVERTISERS INDEX

Advanced Computer Products, Inc. 302
Advanced Intelligence Technology 90
Afton Computer 43
Altex Electronics ..... 164, 165 & 166
American Semiconductor 301
Arlington Computer Products ..... 34 & 35
BCE ..... 239, 240, 241, 242, 243, 244, 245, 247, 248, 249, 250, 251, 252, 253, 254,255, 256, 257 & 258
B.G. Micro ..... 56, 57 & 58
BTE Inc. 64
Bulldog Computer Products ..... 24 & 25
Calicomp 103
CanTech 275
Club AT, Inc. ..... 60 & 61
Communications Electronics, Inc. 40
Competitive Computer Components 45
CompStar, Inc. 143
Compuclassics 95
CompuLink International, Inc. 307
Computer-Age, Inc. ..... 232 & 233
Computer Creations 44
Computer Expert Inc. 261
Computer Mail Order 151
Computer Parts Galore 235
Computer Products & Peripherals Unlimited 287
Computer Products United 47
Computer Shopper Shopper's Mart ..... 272, 274, 276 & 278
Software Mart 270
Computer Solutions 21
Computers International 46
Computers Wholesale of N.Y., Inc. 161
Continental Peripheral Unlimited, Inc. 62
Data/Com South 20
David & Goliath Computers 187
Digifit, Inc. 119
Digital Solutions, Inc. 41
Disk World 238
Diskette Connection 318
80 Microcomputer Service, Inc. 303
EMCO 157
East Coast 6
Electrified Discounters 55
Electronics Parts Outlet 129
Ellis Computing, Inc. 73
Floppy Disk Services 340
Godfather's Used Computer Syndicate ..... 175, 176 & 177
Guenther Computer Products 28
Harmony Computers 23
I C Express 42
Imperial International Corp. 263
JDR Microdevices ..... 333, 334, 335, 336, 337 & 338
Jameco Electronics ..... 296 & 297
L-Com Data Products 306
Lifestyle Computer Products 269
Linde Technology, Inc. 310
Logic Array 65
LogicSoft ..... 37, 38 & 39
Lolir Lectronics Corp. ..... 308 & 309
Lone Star Software, Inc. 290
Lyco Computer Marketing ..... 12 & 13
MFG, Inc. 68
MIX Software 81
Magitronic Technology, Inc. 22
Magnetic Media of New England 82
Mega Media International 16
MicroComputer Concepts 323
Micro Electronics, Inc. 109
Micro Interfaces Corp. 267
Micro Peach Computers 277
Microprocessors Unlimited 121
Micro Supply Organization ..... 304 & 305
Microtech Peripherals, Inc. 211
Micro Warehouse 139
Midwest Micro-Peripherals ..... 2, 3, 26, 27, 112, 113, 324, 325, 326 & 327
Midwestern Diskette Dist. Ctr. 322
Mr. Modem 125
N.D.R.C. ..... 32 & 33
Northeast Computronics 313
Otto Electronics 273
PC 1 ..... 48 & 49
PC Network ..... 50, 51, 52 & 53
PC Star Productions 217
Peachtree Quality Salvage 236
Printers Plus 15
Proto PC ..... 319, 320 & 321
Romanicus Corporation 312
S-100 59
SM Industries, Inc. 11
Sabet Electronics 314
Scottsdale Systems Corp. 5
Sharpe Systems Corp. 67
Software Support, Inc. ..... 228 & 229
Supreme USA, Inc. 311
Synergy Computer Service Co. ..... 316 & 317
Targeted Marketing, Inc. 315
Taiwan Computer Trade Center 271
Tech Personal Computers ..... 218, 219, 220 & 221,
Texas Electronic Sales 234
Timeline, Inc. 328
Tinma Computer Co. 265
True Data Products ..... 230 & 231
Tussey Computer Products ..... 30 & 31
USA Electronics 66
USA FLEX ..... 329, 330, 331, 332 & 339
US/Disk, Inc. ..... 17, 18 & 19
Ultra-Comp 63
Unitech 89
United Computer Resources 285
Westech, Inc. 237
Western Systems & Components 127
Wholesale Outlet 29
Yilon 74
Z-Nix Company, Inc. ..... 96 & 259

ACT 1 SERIES

THE COMPLETE INCLUDING PAYROLL FULLY INTEGRATED
PROFESSIONAL ACCOUNTING SYSTEM
FOR PC-DOS* & MS-DOS*

Here's the best accounting value in the US today! Really professional accounting that is powerful, flexible, and full of integrity.
Compare the features — then call (800) 344-2540 to order.
Our guarantee is your assurance of quality!

ALL THESE FEATURES ONLY
$99.50
+ Shipping & Handling
Introductory Price

To order CALL
(800) 344-2540
8:00 - 5:00 MST
Monday - Friday

PARTIAL LIST OF FEATURES:

GENERAL FEATURES
Menu driven with 2 help references.
Multi company and report generator.
User can easily install in minutes.
Sample data files included.
Complete audit trail.
All modules can post to multiple profit centers.
Fully integrated with single source entry.
Date sensitive user-defined fiscal calendar.
User defined financial reports.
User can categorize Accounts Receivable, Vendors, Payroll & Inventory by user defined type.
User can design checks, invoices, statements and W-2s.
User defined chart of accounts, account numbers and stock numbers up to 15 alphanumerics.

GENERAL LEDGER
Allows for multi-company ledgers.
Unlimited multi-level accounts for departmentalized reporting.
Allows daily automatic posting to appropriate accounts.
Allows recurring journal entries.
User can process transactions two periods into next year.
Unlimited number of accounts.
Up to 10 year account history.
Allows budgeting.

ACCOUNTS RECEIVABLE
Open invoice and/or balance forward.
Allows unapplied payments and multi-company accounts receivable.
Handles credit limits, collection status and payment discounts.
Supports partial payments and finance charges.
Allows unapplied credit memos.
Up to 5 user-defined aging periods.
Customized text on user-designed statements.
Mailing labels and reports with 7 different sorts.

INVENTORY
Supports LIFO, FIFO, weighted average or standard cost.
Supports markup, margin or list.
Allows up to 4 places to right of decimal for units, cost & price.
Supports any unit of measure.
Supports quantity price breaks.

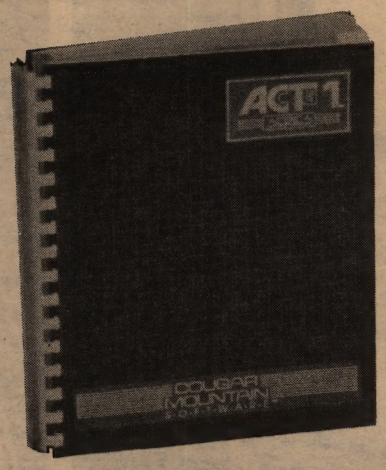
SALES INVOICING
Supports service or product oriented businesses.
User defined tax tables, including multiple sales taxes.
User defined sales discount tables.
Prints packing slips.
Prints immediate invoices if needed.
Alerts user to customer exceeding credit limit.
Sales History Reports.
Customized text on user-designed invoices.
Automatic updating of inventory daily.
Prints sales journals.
Allows return credit memos.
Interfaces with General Ledger, Accounts Receivable & Inventory.

ACCOUNTS PAYABLE
Can post to 200 general ledger expense accounts per invoice.
Automatically updates inventory and general ledger daily.
Automatically prepares payments.
Supports partial payments and handwritten checks.
Supports prepaid expenses and future liabilities.
Processes credit and debit memos.
Computes discounts and records discounts taken.

PAYROLL
Generates automatic payroll.
Automatically posts to General Ledger and Accounts Payable.
Provides up to 15 user-defined rates.
Allows post facto payroll.
Allows distribution of payroll expenses to user-defined departments.
Benefits and deductions are calculated on fixed amounts, hourly amounts, percentage of gross or variable.
Allows additions to gross which may be taxable, nontaxable, or partially taxed.
Handles sick leave and vacations.
All tax tables easily updated by the user.
Handles payroll draws, per diem pay, contract and piece work, hourly and salary.
Handles tip accounting.
Prints 941As and W-2s.

HARDWARE REQUIREMENTS
IBM PC* or compatible.
HARD DISK REQUIRED.

COUGAR MOUNTAIN
S·O·F·T·W·A·R·E™
2609 Kootenai, Box 6886, Boise, ID 83707, 208-344-2540



30 DAY MONEY BACK GUARANTEE
We guarantee the software to perform all of the features listed or money will be returned within 30 days.
Restocking fee applicable.

250 PAGE DOCUMENTATION INCLUDED

CP/M* also available.

*TRADEMARKS
IBM-International Business Machines
PC-DOS — IBM MS-DOS — Microsoft
CP/M — Digital Research

Editorial

By Stan Veit

Where Is The Mainstream Going?

The other evening we were sitting around playing "The PC Game" this is not a program but a sort of role playing game where you invent some fantastic feature for any personal computer, or a totally new personal computer. Given the great features of this new product, you try to determine how well it would do on the market.

After a while someone postulated the theory that given the current state of the personal computer market, nothing would do well if it upset the status quo. After talking about this depressing idea for a while, we all became convinced that it was indeed true.

The mainstream is MSDOS, IBM-compatible computers. Its headwater flows from 8088-powered, MSDOS computers downstream toward 80386 AT type computers running some type of MSDOS-compatible Unix system. Possibly at the mouth of this mainstream there will be a wide delta with many varing streams emerging into the wide sea, but no one can see that far ahead.

There are some other streams flowing into the sea, mainly the M68000 with tributaries called Macintosh, Atari and Amiga and many other small brooklets, but the important system draining the computer watershed is obviously the IBM/intel System.

The current in the mainstream is so strongly IBM that any attempt to diverge results in disaster. If you doubt this look at companies like DEC, Epson, Heath, Sanyo, TI, Tandy and Victor all of whom built non-IBM PC compatible MSDOS computers. They found out very quickly that you either joined the mainstream or went out of business. The DEC Rainbow, TI PRO, Victor 9000, the Epson QX-16, the Heath 1000, Sanyo 555 and Tandy 2000 were all machines that had excellent features and who's owners liked them for those features. A few of them are still being sold but they are really not factors in the business anymore. Hardly any software is being written for them and software is the engine that drives the market. The minute the software publishers decide that there are not enough of any "special version" computers to make it worth while to maintain that version, they dump it and reduce their expenses.

That is the law of the marketplace and although some small software publishers may make a living supporting obsolete computers, or small population computers, very few new programs are written to support old machines.

The mainstream is so strong that even IBM itself can not buck it. If IBM came out with a PC that used a proprietary operating system, it would fail because it could not use all the software that has already been created. The mere name IBM is no longer enough to assure the success of a computer, Big Blue learned that expensive lesson with the PCjr. Whereas IBM originally supplied 80% of the PCs, they are down to about 40%, with clones making up the vast majority.

"Clones," that is a misleading name if ever there was one. Is a Compaq, or a Tandy, or any other PC/XT/AT type MSDOS computer a clone any longer? Perhaps they are generic computers each of which may have some unique feature. There are now a lot of large business and governmental purchasing departments who no longer buy this type of computer by brand names. If the user says the machine is compatible with the software to be used and the price is the low bid, they buy the computer regardless of the logo on the front panel.

In spite of this willingness to try any compatible MSDOS computer that carries FCC and UL approval, just try to introduce a non-compatible system into the company, lab, or factory. You will find yourself fighting purchasing, data processing, standards department and management on all levels. Personal computers have been around long enough so that everyone knows the real cost of introducing a new system into the corporate environment. It is sad but true that anyone who introduced a better mouse trap today would have to do a lot more than proving it caught more mice, before the world made a beaten path to its door! How cost effective is the new trap with regard to education, maintenance, spares provisioning, replacement and so on?

Up to this point, I have been talking about hardware clones, computers and plug-in boards, but did you realize that the production of Software Clones has reached an all time high? We receive a constant flow of press releases and review copies of software just issued that turns out to be another, Sidekick, Lotus, Wordstar, dBase, SuperCalc, etc. Each of these programs has one claim to fame, they sell for a fraction of the cost of the original and are usually not copy-protected. Now these are not pirated copies, or stolen software, they are software clones which may be defined as a program that does the same thing as another program but is not identical in structure. What the legal implications of software clones are, is a can of worms I do not propose to get involved in. We have all known since the start of programming, that once the destination is known there are countless roads to get there. That is why the Patent Office refused to grant patents on software in the first place. A Lotus Corporation can keep a clone maker tied up in the courts until they go out of business, but even they can not go after countless clones. We do not quite take the same attitude toward software clones as we do towards pirated software, yet it may be said that, "he who steals my code is a pirate and may be stopped according to law, but he who steals my ideas is a competitor and there isn't anything I can do about it."

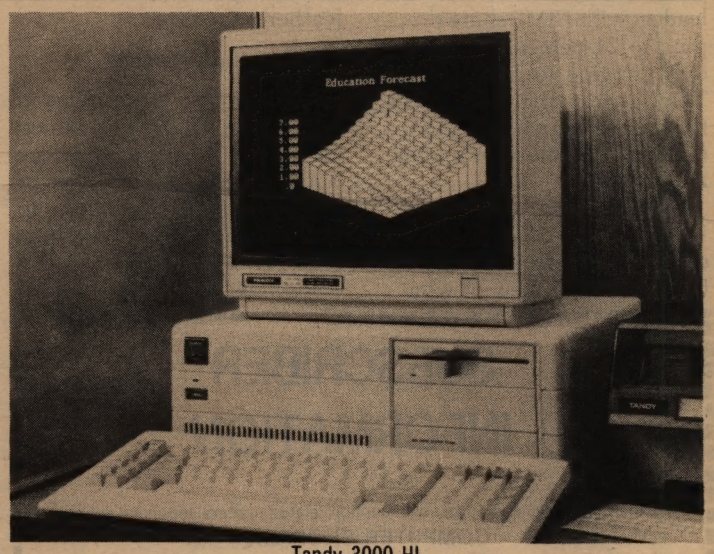
When Adam Osborne announced his company, Paperback Software, he made one of his industry pronouncements, that software was priced too high and there was room for reasonably priced software clones to find a place in the market. He was right and today these programs exist and are a factor that must be considered. The big software publishers are now willing to sell company multi-use licenses for their software, or at least to give multi piece discounts that amount to the same thing. This would never have happened if the software clones did not exist.

We have only one other comment on the direction of the mainstream and that is an observation on what is in the sea toward which the stream flows. There are those who will tell you that the name of the sea is Unix, and perhaps they are right for multi-user systems and LANS. I for one do not think so, I predict that MSDOS has a life of its own and will develop into a far more complex structure than we can visualize today. It will be a system for all users and will allow both simple and complex applications. It will support all types of graphics, communications and mass storage devices including semi-conductor cache memory and optical CDS. ●

Tandy Takes Off

continued from page 7

vided a viable solution to what it perceives as a strong user desire. As Ed Juge, Tandy's Director of Market Planning, explains, "The XT has been the world's best selling business computer and our market research tells us that a lot of users are purchasing "AT" type computers simply to get additional speed. We feel that offering XT compatibility with four times the speed at a reasonable price provides an attractive option to these users." The XL has a starting price of $1,699.00 (for the floppy disk version) and includes in the standard configuration 512k (expandable to 640k), one half-height 360k floppy drive (expandable to two floppy drives and one hard disk or one floppy and two internal hard drives), realtime clock, standard Centronics parallel printer port, plug-in capabilities for an optional 80287 math co-processor and seven expansion slots (of which four are standard PC XT slots and three are 16-bit slots). Options that may be added to the system include Hard Disk Controller Card ($399.00) 20mg Hard Disk Kit ($799.00), 40mg Hard Disk Kit ($1,799.00), Deluxe Graphics Adapter ($399.95), Deluxe Text Display Adapter ($249.00), Tape Cartridge System ($1,999.00), Math Co-Processor ($399.95) and 10mg disk cartridge system ($2195.00).



Tandy 3000 HL

For those "power-users" who do require full AT performance & compatibility there is the 3000 HD. Priced at $4,299.00 the basic unit contains 640k, a 1.2 megabyte floppy disk drive, 40mg hard drive, Real-time clock, serial/parallel adapter and a socket for the 80287 math co-processor. Roach feels that the basic unit provides value superior to that offered by his competition. "It offers ten megabytes more storage, 128k more RAM and greater memory expansion than the PC/AT. Priced at $4,299.00, this version continues to bring the business customer the superior quality and price/performance expected from Tandy." The system provides 10 expansion slots (7 AT; 2 XT & 1 XT half slot. Two AT slots and the half slot are used in the base configuration) and will have the capability of memory expansion of up to 12 megabytes (with the release of the Xenix V operating system).

At the announcement meeting, the Tandy spokespeople continually stressed the service & support available through the more than 7,000 Tandy outlets.

In our judgement, these announcements address the concerns of the entire range of PC users. With a low end cheap enough to use in the home or school and a high end powerful enough to satisfy any micro manager or power user, Tandy has left no potential user uncared for. We feel that these new entries warrant attention and we feel that they should be successful. ●

Radio Shack And The Business Market

by Ed Juge

Editor's Note:

Ed Juge is Tandy Corporation/Radio Shack's Director of Market Planning. He is well known as a company spokesman on the Electronic Networks and through magazine articles. This following article was requested by me, in order to introduce the full scope of Tandy's dedication to the PC/XT/AT compatible market.

Future Computing recently reported that Tandy is number one in the sale of PC-compatible computers. In the July 28 issue of *Computer Retail News,* Storeboard quoted our PC sales for May-July of this year at 90,000, compared to Compaq's 52,000.

In a July 18 report, the Gartner Group said that in the non-Fortune 500 companies (companies with gross revenue less than one-half billion dollars), "IBM's 1985 share (of the PC and PC-compatible sales) was 45 percent; Tandy was number two with 22 percent. 1986 will reverse the leaders with IBM's share dropping to 24 percent, and Tandy's growing to 30 percent." They report that all of the no-name transient clones ("Asians") account for roughly another 30%.

Obviously, something's working for Tandy. Your editor, Stan Veit, has asked me for an insider's view of what's happening. And since he's given me a generous word count to do it, I'd like to start with a bit of historical background.

Tandy

Most readers probably understand that NYSE-listed Tandy Corporation owns and operates Radio Shack, the country's leading distribution system for the products of electronic technology. Tandy started when David Tandy and Norton Hinckley founded Hinckley-Tandy Leather Company in Fort Worth, Texas in 1919. Originally, they concentrated on selling sole leather and shoe repair supplies to shoe repair dealers in Texas. During World War II, David Tandy's son Charles served in the Navy, and began selling leather tooling kits to servicemen. These kits were an instant success, and later became a major item with schools and hobbyists. After the war, Hinckley and Tandy decided to go their separate ways, and Tandy Leather grew to some 150 leathercraft stores.

Radio Shack

Radio Shack was founded in Boston in 1921. It was named after the wooden structure built on the upper deck of World War I warships, to house the era's highest technology... their radio equipment. Early customers included a high percentage of "Ham Radio" operators, who to this day refer to the radio room in their houses as their "shack." That's largely where the image of Radio Shack as a hobby-oriented business got its start.

The "Marriage"

Tandy and Radio Shack came together in 1963, when Charles Tandy found Radio Shack, then a 9-store Boston chain, selling about $9 million per year, and in very poor operating and financial condition. In April, 1963, Tandy acquired Radio Shack, and set in motion an expansion program which was to build the largest network of electronic specialty outlets in the world.

Tandy Today

Although Radio Shack is Tandy's major business, it's not our only business. Tandy made a substantial number of acquisitions throughout its history, but divested itself of all non electronics-related businesses in 1975. Today, in addition to Radio Shack, Tandy operates the Scott/McDuff Appliance and Video Concepts stores, Memtek (producer of audio and videotape sold under the Memorex brand name), O'Sullivan Furniture (the largest manufacturer of ready-to-assemble electronics furniture), and Lika Corporation (a leading manufacturer of conventional and multi-layer printed circuit boards). We also operate 31 Tandy manufacturing plants which produce just over half of the products sold in Radio Shack stores. Of those 31, by the way, 25 are in the U.S.A.

Tandy/Radio Shack Retail Operations

At the retail level, Tandy operates three distinctly different distribution chains. Our Name Brand Retail Group operates the Scott, McDuff, and Video Concepts outlets, selling nationally-known name-brand electronic products and appliances. Our traditional Radio Shack Retail Division operates 4,500 Radio Shack stores selling everything from electronic components to satellite TV systems, cellular telephones, and consumer-oriented computers. Over 1,200 of those stores contain "Plus Computer Centers," special departments which also market our business computer lines. And finally... our third distribution system is the Radio Shack Business Products Division, which operates the 489 Radio Shack Computer Centers, our Education Division, and various business-specific support operations.

By this point, I hope you realize that there's a lot more to Tandy Corporation/Radio Shack than a few 1,200 square foot electronics outlets. Although our hobbyist customers are very important to us (they built our business), we are far from being just a hobby store. In fact, as a product category, "electronic parts, battteries, test equipment and related items" amounted to only 11.9% of our product shipments in fiscal year 1986. "Toys, antennas, security devices, timers and calculators" was another 12.7%. "Microcomputers, software and peripherals" topped any other two categories combined, at 31.4% of our business. Obviously, we're serious about it.

The Computer Market

The Radio Shack TRS-80 Model I was introduced in August 1977. It was the first ready-to-use PC. There had been kits, and even the Apple II, sold about the same time, required a video modulator which wasn't included. The Model I was also the first mass-marketed computer. And Tandy's chairman John Roach is the industry's only surviving senior management pioneer.

Every early PC purchaser was probably a hobbyist. Many claimed business uses, but most were really "If I can make the darned thing do something useful, I'll take it to work with me." We realized the business market would come, and would require more than our retail chain could offer, so we started the first chain of computer specialty stores, the Radio Shack Computer Centers in July 1978.

Business use was building, but it was IBM's 1981 introduction of the PC that "legitimized" the use of PCs in business. In short order, several things happened. Radio Shack's distribution system went from being 90% of the places you could buy computers, to about 10%. The hobby market was saturated. It was a serious business for serious players, and if we wanted to continue to play in the business market we had a transition to make.

By July 1984, we had 1,125 Computer and Plus Computer Centers to serve the business customers, but it was obvious that even more dedication to the business market was needed. In July of that year, our Business Products Division was formed under the direction of Senior Vice President, Ron G. Stegall. A separate regional and district management team was put in place for Computer Centers.

Repair

Our 1984 Annual Report announced the establishment of forty-one Business Products Service Centers in important metropolitan areas. Today, sixty such centers are staffed by some 500 technical people. These centers offer carry-in, on-site, and in critical cases often while-you-wait service, in addition to telephone system repair and installation. (There are a total of 161 service locations nationwide, offering in-shop and on-site PC repair, for total coverage of over 95% of the populated area of the U.S.)

Support

Later in 1984, we also decided to de-centralize our software support, and we established Area Training and Support Operations (ATSO) in roughly those same sixty areas. We moved the Customer Service Representatives and Instructors out of the local Computer Centers into a central ATSO location. An obvious advantage of centralizing both the repair and support is the ability of a more diverse and larger staff to specialize in specific product areas. No more "jack of all trades!" ATSOs furnish Customers and Computer Centers in their areas with training and consulting services for hire. (Fort Worth Customer Service phone lines are still free.)

ATSOs can answer customer questions, help solve software problems, or even do custom database setup work. If a customer wants us to act as system administrator (create new users, archive old files, backup, and general system housekeeping), that service is available on any interval the customer wishes...monthly, bi-weekly, etc.

No other PC manufacturer or retailer offers this level of service and support on a consistent, nationwide basis.

Tandy's Entry Into MS-DOS

There is no question that IBM has set the standards for PC compatibility. They haven't been the leaders in technology or innovation.

Tandy's first entry into the MS-DOS world was unfor-

continued on page 14

SUBSCRIBER INFORMATION

Subscription orders and other subscription related matters should be sent to:

COMPUTER SHOPPER
Circulation Department
P.O. Box 1419
Titusville, FL 32781

New Subscription Prices

USA	Canada	Foreign
☐ 1 Year, USA-$18.00	☐ 1 year, $35.00	☐ 1 year, $100.00 (Air)
☐ (2nd class)	(2nd Class)	☐ 1 year, $25.00 (Surface)

Name _____

Address _____

City _____ ST _____ Zip _____

Charge to VISA or master charge Signature _____

Account # _____ Exp. Date _____

All subscriptions payable in U.S. currency. Please allow 6-8 weeks for delivery of first issue or change of address. H030

Change of Address:

OLD INFORMATION:	NEW INFORMATION:
Account # _____ (first line of address label)	Name _____
Name _____	Address _____
Address _____	
City _____ St ___ Zip _____	City _____ St ___ Zip _____

H030

POWER SOLUTIONS

1-800-AC-SPIKE

Specializing in AC Power Problems

Our product lines include:

- Uninterruptible power systems,
- Stand-by emergency power systems
- AC Line conditioners/regulators,
- Line filters,
- and an assortment of spike/surge suppressors

SMIndustries, Inc.

FORMERLY SHEPHERD MARKETING

312-894-5331

535 W. Wise Road
Schaumburg, IL 60193

NO EXTRA CHARGE FOR

MasterCard OR VISA

DEALER INQUIRIES WELCOME
IL. RES ADD 7% SALES TAX

LYCO COMPUTER MARKETING & CONSULTANTS

ATARI

ATARI
1050 129
SF314 219
SF354 175
130 XE ..... CALL
65 XE ..... CALL
520 ST
Monochrome... CALL
520 ST Color..... CALL
SHD 204
20 Meg ..... !
1040 ST ..... CALL

BRODERBUND
Printshop 28.75
Graphic
Library I, II, III... 18.75
Karateka..... 19.75
Printshop
Comp..... 24.75

ACTIVISION
Hacker..... 15.75
Ghostbusters 15.75
Great AM Race... 15.75
Music Studio 22.75

MICROPROSE
Silent Service.... 22.75
F-15 ..... 22.75
Conflict in
NAM..... 24.75
Kennedy
Approach 22.75

SSI
Wizards Crown... 24.75
Gettysburg..... 34.75
Gemstone
Healer 24.75
Phantasie..... 24.75

EPYX
Karate Champ... 20.75
Apshai Trilogy ... 24.75

SUBLOGIC
Flight Simulator... 29.95
Night Mission
Pinball..... 18.95
Scenery
Disks .... Each 14.95

ACTIVISION
(520 ST)
Music Studio 34.75
Hacker..... 26.75
Little People..... 29.75
Paintworks..... 40.75
Hacker II..... 29.75

SSI
(520 ST)
Phantasie..... 24.75
Baseball 24.75

FIREBIRD
(520 ST)
The Pawn..... 26.75
Star Glider..... 28.75

TIMEWORKS
(520 ST)
Word Writer..... CALL
Swift Calc..... CALL
Data Manager.... CALL

apple

ACTIVISION
(Apple)
Alter Ego 28.75
Little People..... 24.75
Mindshadow..... 24.75
Hacker 24.75
Gamemaker 24.75

BRODERBUND
(Apple)
The Print Shop..... 31.50
Graphic Libs. ... Each 18.50
Bank Street
Writer 128 K..... 42.75
Bank Street Speller... 42.75
Carmen Sandiego ... 22.75
Karateka..... 22.75
Captain Goodnight... 22.75
Muppet Cruise..... 25.75
P.S. Companion 24.75
Science Kit 35.95

MICROPROSE
(Apple)
Crusade in Europe... 24.75
Decision in Desert... 24.75
F-15 Strike Eagle 20.75
NATO Commander... 20.75
Silent Service..... 20.75
Solo Flight..... 20.75

SSI
(Apple)
Phantasie II..... 24.75
Wizard's Crown 24.75
Rings of Zilfin..... 24.75
Colonial Conquest... 24.75
Battlegroup..... 35.75
NAM..... 29.75

COMMODORE

COMMODORE
128 ..... CALL
C 1902-A ..... CALL
C 1350 Mouse..... 39
C 1700 128 K RAM.... 145
C 1750 512 K RAM.... 269
Sane..... 35
Perfect Writer..... 45
Perfect Calc 45
Perfect Filer 45

BRODERBUND
The Print Shop..... 24.75
Graphics Library
I, II, III 15.75
Karateka..... 17.75
Bank Street Writer... 29.75
Lode Runner 19.75
Printshop Comp..... 24.75
Bank Street Speller... 29.75
Bank Street Filer 29.75
Bank Street Mailer... 29.75
Championship
Lode Runner 19.75

SUBLOGIC
Nightmission
Pinball..... 18.95
Flight Simulator..... 29.95
Set Simulator..... 25.95
Football..... 25.95
Scenery Disk ... Each 14.95
Set 1-6 ..... 69.96

INDUS
GT Commodore..... 179

ACTIVISION
(C-64/128)
Alter Ego 28.75
Hacker 18.75
Little People..... 20.75
Game Maker..... 24.75
Borrowed Time 18.75
Space Shuttle 18.75
Music Studio 22.75
Mind Shadow..... 18.75
Road Race..... 18.75
Fast Tracks..... 22.75
Count Down 18.75
Basketball 18.75

BATTERIES INCLUDED
Paperclip 35.95
Consultant..... 35.95
Paperclip
W/Spell Pack 48.95

EPYX-64
Movie Monster..... 24.75
Vorpol Kit..... 22.75
Fast Load..... 24.75
Summer Game II..... 24.75
Super Cycle 24.75
World Games 24.75
Football..... 24.75

XETEC
Font Master II 64 .... 32.95

MICROLEAGUE
ML Baseball 24.95
General Manager.... 24.95
85 Team Disk..... 14.95
Franchise..... 19.95
Stat Disk..... 16.95

ACTIVISION
(Amiga)
Hacker 26.75
Mind Shadow..... 26.75
Music Studio 34.75
Borrowed Time 26.75

ACCESS
(C-64 — Amiga)
Leader Board..... 24.75
Leader Board
Amiga 24.75

MODEMS

SUPRA
1064 Modem (C-64)... 49.95
Supra 300 ..... 39.95
Supra 1200 ..... 149.95

US ROBOTICS
Password 1200M..... 189
Courier 2400 395

DIGITAL DEVICES
Pocket Modem AT.....Call

DSI
Messenger 64/128... 39.95

COMMODORE
1670 Modem 155

COMPUSERVE . . 18.95

ZOOM
PC 1200 ST 189
PC 1200 XL 259
PC 1200 XL/PFS 279

ANCHOR
Volksmodem 55
Volksmodem 12 179

ATARI
1050 129
XM 301..... 39.95

MONITORS

PANASONIC
TR-122 MYP 12" Amber TTL.139
TR-122 M9P 12" Green TTL..139
TX-12H3P 12" RGB.....369
DT-H103 10" RGB.....349

NEW HOURS!
Mon-Thur 9AM-8PM
Fri 9AM-6PM
Sat 10AM-6PM

ZENITH
ZVM 1220.....89
ZVM 1230.....89
ZVM 1240.....149

THOMPSON
365 12 RGB.....CALL

HITACHI
MM-1218 12" Green.....99
MM-1220 12" TTL Amber..129
CM-1406C 13" color
w/ cable.....179
CM-1409 13" RGB.....305
CM-1216D 12" RGB.....385
CM-1455S 13" 720x350....525
CM-1457A 13" RGB
720x460.....679

NEC
Multisync.....CALL

TEKNIKA
MJ-10.....149
MJ-22.....249
MS-305 RGB.....309

COMMODORE
1902 Color..... CALL
1802..... CALL

PRINCETON GRAPHICS
MAX-12 Amber 175
HX-12 RGB..... 458
SR-12 RGB..... 575

NEW HOURS!
Mon-Thur 9AM-8PM
Fri 9AM-6PM
Sat 10AM-6PM

LYCO COMPUTER MARKETING & CONSULTANTS

SAVE ON THESE IN STOCK PRINTERS

1080....$195

NX-10....Call

PANASONIC
1080 195
1091 225
3131 249
1092 309
1592 419
1595 595

CITIZEN
120-D 179
MSP-10 285
MSP-15 385
MSP-20 325
MSP-25 485
Premier 35 469

C.ITOH
1550 SP+ ..... CALL
D1040 ..... CALL
Prowriter Junior..... CALL
Prowriter 8510 SP+... CALL

EPSON
LX80..... CALL
FX85..... CALL
DX10 ..... CALL
HI80 ..... CALL
HS80 ..... CALL
FX286 ..... CALL
LQ800..... CALL
LQ1000..... CALL

SILVER REED
EXP 420P..... CALL
EXP 600P 489
EXP 800P 649
EXP 770..... 740

DIABLO
D25 549
P-32 CQI 699
635 102
P-38..... 1749
D-80 IF..... 2395

SEIKOSHA
SP-1000 VC (C-64) 175
SP-1000A Centronics... 195
SP-1000 IBM..... 195
SP-1000 As RS-232 ... 195
SP-1000AP Apple IIC... 195
BP-1300..... 469
BP-5200..... 649
BP-5420..... 999
Color Kit..... 119
BP-5420 Ribbon..... 12.50
SP-1000 Ribbon 8.50

BROTHER
HR-15XL-P 359
HR-15XL-S 359

JUKI
Juki 6100..... CALL
5510 Juki..... CALL
Juki 6300..... CALL
RS-232 Serial Board.... 55
Color Kit..... 105
6100 Tractor 119
6100 Sheet Feeder.... 209

LEGEND
808..... 148
1080..... CALL
1380 229
1385 289

TOSHIBA
321 P/S 495
351 Sheet Feeder 529
P 341P 969
P 341S 999
P 351+..... 1149

STAR MICRONICS
LV 12-10 (New) ..... CALL
NL-10..... CALL
NX-10..... CALL
NB-15..... CALL
SB-15..... CALL
SG-15 367
SD-10 319
SD-15 438
SR-10 469
SR-15 578
SB-10 589

OKIDATA
Okimate 10XE..... 179
292 ..... CALL
293 ..... CALL
Okimate 20ST..... 199
120 NLQ 205
182..... 214
192..... 348
93 ..... CALL

DUST COVERS

Atari
520ST..... 11.95
130XE..... 6.99
800XL..... 6.99
1050..... 6.99
1025..... 7.99

Commodore
C128..... 7.99
1571/1541..... 6.99
1902..... 10.95
1702..... 8.99
C64/Vic20..... 6.99

Panasonic
1090/1091..... 8.99
1092..... 8.99
1093..... 9.99

DRIVES

INDUS
GT Atari 179

COMMODORE
1571..... CALL
1541..... CALL

COMTEL
Enhancer 2000 (C-64). 149

SUPER SAVINGS

INTERFACING

ORANGE MICRO
Grappler + (Apple)..... 85
Grappler 16K (Apple)... 149
Orange (Apple)..... 59
Grappler C (IIC)..... 85

DIGITAL DEVICES
U-Print A 49
Apeface..... 39

CARDCO
G-Wiz (C-64) 47
Super G (C-64)..... 54

XETEC
Super Graphix 64..... 64
Super Graphix JR 64.... 45
Xetec AT..... 39.95

ATARI
850.... 109

FASTEST SERVICE

DISKETTES

5¼" DISKETTES

MAXELL
SSDD 9.99
DSDD..... 12.99

BONUS
SSDD 6.99
DSDD..... 7.50

SKC
SSDD 8.50
DSDD..... 9.50

3.5" DISKETTES

MAXELL
SSDD..... 16.99
DSDD..... 23.99

SKC
SSDD..... 14.99
DSDD..... 19.99

VERBATIM
SSDD..... 16.99
DSDD..... 24.99

LOWEST PRICES

IBM-PC

BRODERBUND (IBM)
Bank Street Writer... 48.95
Print Shop 34.95
Graphics Library I.... 22.95
Graphics Libary 2.... 22.95
Ancient Art of War... 22.95
Champ Lode Runner 22.95
Karateka..... 22.95

SUBLOGIC (IBM)
Set Simulator..... 34.95
Scenery Disks... Each 14.95
Set 1-6 ..... 69.95
S.D. Japan..... 14.95
S.D. San Francisco ... 14.95

ACTIVISION (IBM)
Borrowed Time 24.75
Mindshadows..... 24.75
Music Studio 29.95
Alter Ego 29.95
Alter Ego (Male) 29.55
Pebble Beach.....

QUADRAM
Gold Quadboard..... 399
Silver Quadboard..... 229
Quadboard 199

TOLL FREE 1-800-233-8760

In PA 717-494-1030
Customer Service 717-494-1670

MasterCard

or send order to
Lyco Computer
P.O. Box 5088
Jersey Shore, PA
17740

VISA

RISK FREE POLICY
In stock items shipped within 24 hours of order. No deposit on C.O.D. orders. Free shipping on prepaid cash orders within the continental U.S. Volume discounts available. PA residents add sales tax. APO. FPO. and international orders add $5.00 plus 3% for priority mail service. Advertised prices show 4% discount for cash, add 4% for MasterCard and Visa. Personal checks require 4 weeks clearance before shipping. We do not guarantee compatibility. We only ship factory fresh merchandise. Ask about UPS Blue and Red label shipping. All merchandise carried under manufacturer's warranty. Return restriction applicable. Return authorization required. All items subject to change without notice.

Radio Shack continued from page 10

tunate. While the Tandy 2000 was by far the most technically advanced MS-DOS product of its time, the market didn't want technical excellence. People buy on perception, and the perception was that full compatibility is a "must." First-time buyers couldn't live without "full compatibility," but many couldn't even tell you in general terms what it meant. The Tandy 2000 had a dedicated, though small following, and has turned out to be mostly a niche product.

PC Compatibility

So, Tandy's perception of "full compatibility" today is that it's a lot like power steering. In the early days, it was enough reason to buy one car over another. In today's market, it is taken for granted... not even an issue. But it's certainly not a reason to buy one car over another. So, in a world of very low-priced transient no-name clones, how will buyers choose a computer?

Most corporations today employ a "PC Evaluator" or "PC Buyer" who recommends which products the company should buy. And we know those companies don't need to hire someone to tell them to buy IBM. (IBM would be most happy to tell 'em that for nothing.) So, to justify their position, PC Buyers are evaluating products again. The very low-cost imports have focused attention on the fact that compatibility doesn't have to cost an arm and a leg. We think they've opened up a big opportunity for us, since we're the only American-made, name-brand manufacturer competing in the low cost segment of the market. But our goal is to have that buyer see real extra value in Tandy products... features, functions, benefits... before the price even comes up.

Tandy's Latest Products

Our newest offerings certainly reflect this philosophy. The Tandy 1000 EX is ideal for school and home use, with double the PC's speed plus enhanced graphics and sound. It's new Personal DeskMate program brings Mac and Microsoft Windows user interface conventions to a PC-compatible for the first time!

The 1000 SX is also double the PC's speed, comes with 384K, and expands to 640 on the main board. A 1000 SX in normal configuration offers almost twice as many PC-compatible expansion slots as a PC or XT.

Tandy's 3000 HL brings 80286 horsepower (4 times XT performance and the ability to expand into the AT arena) to the XT marketplace, at a price 20% below that of the PC-XT. The Tandy 3000 HD with 28ms 40Mb hard drive sets a new standard in AT access time.

Even the new CoCo 3 runs twice as fast as the old one, expands to 512K, and is capable of multi-tasking.

And reliability has top priority at Tandy. Take the Tandy 1000 for example... it had a Mean Time Before Failure (MTBF) of over 28,000 hours! While we require vendor shipments to meet a less than 3% defect rate at our warehouses, the 1000 was significantly below 1%. Sixty-five percent of the space and effort at the 1000 plants was devoted not to manufacturing, but to Quality Control.

Our product line is outstanding in every respect! So, how do we keep the prices low? Simple. As Business Week said last year, we are the lowest-cost U.S. manufacturer of PCs. We don't do it by corner-cutting, though. We do it through vertical integration. Our Lika subsidiary makes printed circuit boards, not from board material, but all the way from raw fiberglass. Tandy Molded Products injection molds our housings. Tandy Wire and Cable makes our cable assemblies... after drawing the wire from copper rods the size of your little finger and insulating it from bulk plastic stock. We can and do manufacture some of our own power supplies and monitors. And the newest Tandy products contain Tandy-designed, proprietary LSI devices. All this results in minimum labor cost, and low product cost. Most of our competitors purchase subassemblies and do only a superficial level of final assembly "in house."

Asian Competition

Some of the recent Asian imports offer questionable compatibility, no service, no support, and questionable long-term parts availability (even if

continued on page 36

Patch Publications Appoints Group Publisher

Glenn Patch, Chairman of Patch Publications has announced the appointment of Richard F. Govatski to be Group Publisher of magazines published by the company. These consist of *Computer Shopper, Video Life and Shutterbug.*

Shutterbug is a fifteen year old photographic magazine that is considered the "Bible of camera collectors". Video Life is a magazine that serves the alternate video market.

Mr. Patch explained that the explosive growth of *Computer Shopper* and planned development of our other magazines requires the specialized experience of an executive such as Mr. Govatski to assist President and CEO M. Frank Billings in the expansion of Patch Publications.

Mr. Govatski formerly was associated with Ziff Davis as Director of Advertising Sales for *Popular Electronics* and *Computers & Electronics* magazine. His previous experience included V.P. Marketing for Memotech, marketing for Tymeshare and broadcasting with ABC Network.

He will re-locate to Titusville, FL near Kennedy Space Center and headquarters of Patch Publications. ●

BUYING, SELLING, TRADING - NEW & USED EQUIPMENT

Yes! I want to find the best bargains. Enter my one year subscription to the following *PATCH PUBLISHING CO., INC. MAGAZINE/SHOPPER:*

☐ 1 Year (12 issues) **Computer Shopper** **$18.00**
☐ 1 Year (12 issues) **Shutterbug** **$14.97**
☐ 1 Year (12 issues) **Video Life** **$11.97**

For faster service call Toll Free 1-800-327-9926 In FL call 305-269-3211

GUARANTEE If not completely satisfied with my subscription, I may cancel and receive a refund on any unmailed issues.

☐ Payment Enclosed - (check or money order) ☐ Bill Me

☐ Charge to VISA/MC Acct. #_____ Exp. Date____ Signature_____

Name _____ Address _____

City_____ ST____ Zip_____

Send to: Patch Publishing Co., Inc. • Circulation Dept. • P.O. Box F • Titusville FL 32781

H330

patch publishing co., inc.

Offer Valid in USA only. Please allow 6 to 8 weeks for delivery of first issue. New subscribers only.

PRINTERS *Plus*

800-562-2727

No Additional Cost For MasterCard or VISA

Qualified Corporate & Educational Purchase Orders Accepted

CALL Soft-Quote
Software Pricing System
TODAY'S PRICE . . . TODAY!
Competitive Pricing on Popular Software
1-800-562-2727

★★SPECIAL VALUE★★
Letter Quality
EPSON LQ-800 & LQ-1000
- 24 PIN PRINTER
- 180 CPS
- 60 LQ
- 7K BUFFER
- PARALLEL & SERIAL I/F

Call For Special LQ-Plus Packages

EPSON

FX-85
- 160 CPS
- NLQ MODE
- IBM 5152 GRAPHICS

$359. Sug. Retail $549.

FX-286
- 200 CPS
- 40 NLQ
- 8K BUFFER
- IBM 4201 or EPSON CODE

$499. Sug. Retail $799.

LX-80
$229. Sug. Retail $329.

NEW
300 CPS from EPSON
EX-800 & 1000 SERIES
- 9-PIN
- 300 CPS
- 60 NLQ

New SelecType II Controls
Built in "Push" Tractor Feed
Optional Color Kit

LQ-2500
- 24 PIN
- 324 CPS
- 108 LQ

Advanced 20-Character LCD Control Panel
Optional Color Kit

Call To Place Your Order On A New Generation Printer From Epson

CR-420 High Speed Printer
- 420 CPS (Draft Mode)
- REAR & BOTTOM PAPER ENTRY
- PRINT UP TO 5-PART FORMS
- FRICTION & TRACTOR FEED
- PARALLEL & SERIAL I/F
- BUILT-IN SOUND ENCLOSURE

$999. Suggested Retail $2,295.

SAFE
SAFE POWER SYSTEMS, INC.
Standby Power Systems
PROTECTS INVALUABLE DATA FROM VOLTAGE DROPS & POWER OUTAGES
Two-Year Limited Warranty
BUILT-IN SURGE SUPPRESSION

Now Available...
TOSHIBA CITIZEN DIABLO
Qume. brother. AST RESEARCH INC.
PRINCETON GRAPHIC SYSTEMS NOVELL

DIABLO COMPATIBLE DAISYWHEEL PRINTERS
EPSON DX-10 $199.
EPSON DX-20 $299.
EPSON DX-35 $619.

SERVICE *Plus*
UPS In . . . UPS Out
Service Department
Authorized Warranty Service

TOSHIBA PRINTERS
P321 P341 P351 P351C Color
- 24 PIN
- LETTER QUALITY
- PARALLEL/SERIAL

Competitively Priced!

SHIPPING AND HANDLING AT ADDITIONAL COST. (MC AND VISA AT NO ADDITIONAL CHARGE, 5% SURCHARGE FOR AMERICAN EXPRESS.) OFFER GOOD WHILE SUPPLY LASTS. PRICES ARE IN EFFECT UNTIL OCTOBER 15, 1986. SOME ITEMS MAY NOT BE AVAILABLE ON PUBLICATION DATE.

1-800-562-2727
Or In Missouri Call: 1-314-227-4371
PRINTERS PLUS /910 Clayton Rd., #217, Ballwin, MO 63011

ALL EQUIPMENT CARRIES MANUFACTURER'S WARRANTY. RETURNS REQUIRE PRIOR APPROVAL AND ARE SUBJECT TO A RE-STOCKING FEE. ALL SALES ARE FINAL. WE CANNOT GUARANTEE EQUIPMENT COMPATIBILITY.

AP17

OUT OF THE MIDDLE AGES OF HARD DISK DRIVE TECHNOLOGY COMES A NEW DAWN OF STORAGE CAPACITY, SPEED, RELIABILITY, AND SERVICE — AT UNBEATABLE PRICES.

THE MEGAFLIGHT SERIES™ with Softdrive™ Software

MEGAMEDIA starts where ***SEAGATE*** ends.

The **MegaFlight Series** transforms ordinary disk drives into slick, quick, self correcting machines.

MegaMedia Drives **Seagate** Best

The MegaExpanded™: XT 20 $446.00 AT 20 $537.00

Softdrive™ software transforms a standard 20 MB Seagate drive into an average of 30 MBs total storage space! Softdrive expands disk drive capacity by an average of 40 - 60%. Essentially, you:

Buy This and Get This! : A little High Tech Magic!

The MegaTurbo™: XT 20 $469.00 AT 20 $560.00

Did you know that the best way to speed up a PC system is by speeding up its hard disk drive? In the MegaTurbo, in addition to expanding disk drive capacity, softdrive™ speeds up disk drive access by cutting average access time in half, MINIMUM. This high tech magic is achieved with a sophisticated disk cache.

The MegaPerfect™: XT 20 $469.00 AT 20 $560.00

Automatic error recovery from would-be disk crashes can mean the difference to PC users between business as usual and a crashed system. To the dealer, it can mean the difference between happy customers and support headaches. In addition to expanding the drive's capacity, MegaPerfect performs the most complete error correction available today for PCs, and it's completely transparent to the user.

The MegaUnified™: XT 20 $464.00 AT 20 $555.00

In the MegaUnified, softdrive™ improves disk drive performance by reuniting all the fragments of a file so that they are physically contiguous on the disk. This reduces time spent by the disk drive in finding all the parts of the file which ordinarily may be spread out all over the disk. Of course the MegaUnified expands the drive as well, as in the entire MegaFlight™ series.

The MegaDeluxe™: XT 20 $499.00 AT 20 $596.00

Includes all of the above for the biggest, fastest, most reliable Seagate you've ever seen. The COMPLETE PC storage solution.

Why settle for a 20 MB horse and buggy when, for a few more dollars, you can have a 30 MB slick quick, self correcting machine?

Dealer inquiries welcomed.
All systems are formatted and tested.
XT models include controller.

Our Usual Great Prices on Plain *Seagate* Kits:

XT 10 Kit: $359.00
XT 20 Kit: $398.00 AT 20 Kit: $495.00
XT 30 Kit: $469.00 AT 30 Kit: $607.00
XT 40 Kit: $649.00 AT 40 Kit: $684.00

OTHER FINE PC EQUIPMENT

AT-Turbo Crystal™

Try our hot little AT-Turbo-Crystal - it speeds the AT up by 33 - 100%. Switchable to as high as 12 MHz without rebooting. **$79.95**

September Special - buy 10 ***Seagate*** kits or **MegaFlight™** systems and get **1 AT-Turbo Crystal FREE.**

Place your order NOW.

Call us toll free at 1-800-624-2232 Ext 355

MegaMedia INTERNATIONAL . . . where the driving force begins.

1479 SOUTH GREENWOOD AVE. SUITE A CLEARWATER, FLORIDA 33516

SOFTWARE WAR

OVER 10,000 IBM/COMPATIBLE PUBLIC DOMAIN PROGRAMS AVAILABLE FROM OUR "NATIONAL SOFTWARE LIBRARY"

ONLY $2.99

WORD PROCESSORS

PC-Write (101) Full screen word processor version 2.4.
EasyRite (102) compiled with BASIC source code with a label making program.
Letter Writer (103) makes letter writing a snap.
Script Writer (104) Specialized word processor for writers of screen plays
Patch locations for WordStar (105) Customize WordStar startup defaults.
OMNI (106) Fast memory editor with integrated communications software.
Chi-Writer (108) Multiple font/scientific word processor.

GAMES

JetSet Flight Simulator (201) Turn your PC into the pilot's cockpit.
SpaceWar (203) and other basic programs
Arcade Games (204) Kong, Pacman, Pango, and Bricks.
Trivia Game (208-209)
FlightMare (212) Be a fighter pilot in the future
Castle Adventure (213) includes Membrain ram disk software.
Galaxy Trek (214) great Star Trek type game.
Trucker (215) Drive an 18 wheeler from LA to NY. Watch out for Smokie!
3-D Tic-Tac-Toe (216) also includes Bridge, Keno, Roulette, and Othello.
Trivia Towers (219-220)
JumpJoe (222) like Donkey Kong (requires color monitor)
Hopper (224) "Frogger" clone
Aardvark (225) ABM, QUBERT, Temple, and Bugs.
Tune Trivia (226) and Monopoly PC
Norland Hangman (227) Very challenging and well thought out version of hangman.
PC-CHESS (232) 4 levels of play with many options
BASIC games (233) Pac-Man, Lunar Lander, Startrek, Jailbreak, Meteor, Fence, and Breakout.
NewTrek (235) 3 levels of difficulty. Battle the Klingons and Romulans.

TELECOMUNICATIONS

Q-Modem (302) version 2.87 Fast Modem software.
FIDO BBS (303-304) One of the most often used and friendliest Bulletin Board Systems around.
Kermit (305-306) communicate with mainframes (with source code)
Modem7 (307) MS_DOS implementation of the CP/M modem program.
PC-COMM (308) with random redial capabilities.
PC-Talk (310) modem communications
RBBS-PC (311) multi-user BBS. CPC 12.5B version 1.8
PC-Dial (313) Flexible communications program.

MUSIC

PC-Musician 1.7 (2401) Develop and play back songs on your PC.
PianoMan (2402) Record, edit and then play back your favorite tunes.

HACKERS/SECURITY

8088 Disassembler. (401)
Unprotect Programs (402) This disk gives you tips.
Encode/Decode (401) Protect your files from others.

SPREADSHEETS

PC-Calc (501) Spreadsheet can have up to 26 columns and 255 rows.
FreeCalc (502) Spreadsheet can have up to 25 columns and 100 rows.
Calc (503-504) up to 65 columns by 256 rows. Linked spreadsheets can provide "3-D" capabilities.

SPREADSHEET TEMPLATES

Lotus Utilities (601) Convert text files into 1-2-3 loadable format.
Formula Documentor (604) use to make 1-2-3 spreadsheets more understandable.
Lotus 1-2-3 Utilities (606) Macros.
Lotus 1-2-3 Utilities (607) Spreadsheet templates.

GRAPHICS

KeyDraw CAD system (703-704) Requires color graphics.
PC-Graph (705) Create plots from PC-FILE data files.
Designer (706)Graphics editing (requires BASICA and color graphics)
Digi-Draw (708) Program emulates paper and pencil drawing on your PC (requires color graphics)
Sideways (709) Prints text sideways
DrawMan (711-712) Create bar graphs/slide shows from DIF files.
Pixel-It (716) Drawing program requires color graphics adapter.
3-D (719) Allows you to create, edit, and save 3 dimensional objects.
Draw.bas (720) Draw circles, lines, boxes, change background and palette colors, save and load files to/from disk.

ACCOUNTING/FINANCE

The Portworth Package (801) Monitor and evaluate your stock portfolio.
Finance (802) Determines present and compound values; perform mortgage, loan and bond analyses.
PC-General Ledger (803) Written by a financial executive with more than 25 years of experience.
Time and Money (805) Helps you to manage your precious time and money.
FM.EXE (806) Finance Manager.
TaskPlan (807) Evaluate costs of your companies' workers tasks.
CPA Ledger (808-810)
Mr. Bill billing program (811-812) Helps you bill your clients.
ANALYST (818) This program allows the user to analyze the costs of moving into a new house.
Stock Charting System (819) Allows you to create and output volume high/low close charts for stocks that you choose.

FORTH

Uniforth and A.D.A Prolog (1404)

DATABASE MANAGERS

PC-File (901) User friendly filing system.
Inventory (911) Parts inventory control system.
File Express 2.95 (912-913) Powerful and user friendly Data Base manager.
pBASE 1.02 (917) Cross between dBASE and IBM's SQL.
3 by 5 1.0 (918) An easy to use index card filng syustem.
NewBase (919) Menu driven database system.

STATISTICS

EpiStat (1001) statistical package.
Statistical Tools (1002-1003)
EightCurv (1004) Fit eight curves to a set of ASCII numeric data.
SPPC (1005) Demo allows you to perform simultaneous and hierarchical multiple regressions.

BASIC

PC-Professor (1102) BASIC Tutorial
BASIC program generator (1103) Answer questions, and this program creates the source code for you.

PASCAL

Turbo Pascal Sub-Routines (1202) Includes the source code for some graphics demos.
Turbo Pascal Tools (1203) Includes routines to draw circles, hide the cursor, write diskette labels, and more.
Turbo Sprites and Animation (1207)
Pascal and "C" Tools Vol 1 (1209)
Turbo Pascal Tutor (105)
Turbo Games (719) Includes Wumpus, Life, and Lander.

"C"

XLISP 1.5 (1301) with "C" source
Small C compiler (1302)

ASSEMBLY LANGUAGE

CHASM (1501)
Tiny BASIC Interpreter (1105)
LANGUAGES: MISC.
LadyBug LOGO (1601)
DSCREEN (2802) dBASE II screen generator.

DOS

ASSIST (106) Memory resident DOS help
DOS help (1901) Disk based DOS help
DOS-a-matic (1903) Menu driven program makes using Dos a cinch.

ARTIFICIAL INTELLIGENCE

ESIE (2001) Explore the futuristic world of expert systems.
Eliza (223) The famous therapist AI demonstration program.

EDUCATIONAL

PC-TOUCH (2502) Typing Tutor compiled with BASIC source.
MATHPAK (2506) Math Tutor includes instructions on addition, Hex/Octal conversions, trig functions and more.
QUEST.BAS (2507) Learn about American history while playing an adventure type game.
PC-Professor (2513) BASIC tutorial
Word Processor (2514) for Kids.
Funnels and Buckets (2517) This game makes learning basic math skills. fun.
Batch File Tutorial (419) Learn how to use this time saving feature of DOS.

UTILITIES

FRED (2701) Full screen editor
EDIT 1.11 (2703) Full screen compiled editor
Editor (2704) written in C, with DeSemet C source code. Editor supports macros.
ROFF (2801) technical text formatter with C source code.
Xword 2.12 (2802) Translate to and from different text formats.
UNWS (2805) This assembly language program strips the high order bits from files saved in WordStar's document mode.
Epson Printer Utilities (2902) Allows you to change modes for your Epson printer.
FASTPRT (2907) Fast version of the DOS print screen function.
Membrain (3001) Allows you to set up an extremely fast RAM disk.
Hard disk utilities (3201) includes CED, Partner 1.1, and POPALARM.
Judy (3202) SideKick like program.
DeskMate (3203) SideKick like program.
Monday (3204) Allows you to keep track of your appointments.
BASIC Utilities (3401) Includes CALCULATE.BAS, IBMLABEL.BAS, and EASYRITE.BAS.
Disk Alignment (3402) Helps perform disk alignments on disk drives.
Browse and BackScrl (3403) Allow files to be viewed backward and forwards.
FreeCopy (3405) copies disks with source code.
Miscellaneous utilities (3412) includes AXX,CED, and EQUIP102.
FANSI-CONSOLE (3413) Fast ANSI console driver.
Miscellaneous Utilites (3415) Create hard copies of directories for your disks.
AREACODE (821) Type in a state and fine the area code.
PCWINDOW (3416) Poor man's version of SideKick.
Util (3418) Combines several utilities into one program.
Newkey (3419) create your own macros.
Miscellanous Utilites (3420) backup files, date stamping, and more.

APPLICATIONS

Micro-Gourmet (1704-1705) dBASE II program helps you locate Gourmet recipes.

... and many more!

MINIMUM QUANTITY — ORDER OF 5 PROGRAM DISKS. FREE CATALOG WILL BE SENT WITH YOUR ORDER UPON REQUEST

We accept checks (allow 10 days to clear), money orders, MasterCard, Visa, American Express, C.O.D. (add $1.90). For information, call (619) 942-9998.

800-992-1992 NATIONAL | **ORDER TODAY** | **800-992-1993 CALIFORNIA**

511-104 Encinitas Blvd.
Encinitas, CA 92024

U.S/DISK, INC.

Hours Mon.-Sat.
8:30 am - 4:30 pm
Pacific Time

DISK WAR

FREE TYVEC SLEEVES, HUB RINGS, WRITE PROTECTS AND ID LABELS

5.25" DISKS	BULK	BOXED*
ss/dd	.44	.59
ds/dd	.49	.64
ds/dd notchless	.59	.74
ds/dd flippy	.59	.74
ds/dd 10 hard sector	.69	.84
ds/dd 16 hard sector	.69	.84
ds/qd 96 tpi	.79	.94
ds/qd 96 tpi 10 hard sector	.99	1.14
ds/qd 96 tpi 16 hard sector	.99	1.14
ds/hd 1.2mb for AT	1.49	1.64

5.25" DISKS/formatted	BULK	BOXED*
Atari 800 (18/128)	1.99	2.14
CPT	1.99	2.14
Cromemco	1.99	2.14
DEC RX50 (also Rainbow Compatible)	1.99	2.14
Epson QX10	1.99	2.14
Lanier no problem	1.99	2.14
Lanier super no problem	1.99	2.14
Lanier easy 1	1.99	2.14

5.25" DISKS/formatted	BULK	BOXED*
Lexitron (with/without header)	1.99	2.14
Lexitron/Raytheon (with/without header)	1.99	2.14
Phillips Micom	1.99	2.14
Phillips 3000 (with/without header)	1.99	2.14
Syntrex Aquarius	1.99	2.14
Xerox 820	1.99	2.14
Xerox 820 plus	1.99	2.14

5.25" COLOR DISKS	BULK	BOXED*
ds/dd color pack assortment A, B, or C †	.59	.74
ds/dd color pack assortment A flippy †	.69	.84

† Color pack assortment A: red, orange, yellow, blue, green.
† Color pack assortment B: maroon, brown, dark blue, silver, gold.
† Color pack assortment C: pink, med. blue, beige, white, light grey.
† All colors are available separately.

All items in stock all the time
Same Day Shipping
Disks made in the U.S.A.

FREE BONUS OFFER
with
Order of 100 Disks or more
5 Disks Full of Public Domain Programs
for
IBM, Apple, MacIntosh or Commodore
(A Value of $14.95)
or
A Free Head Cleaning Disk
(A Value of $12.99)
ASK FOR OUR PUBLIC DOMAIN CATALOG

3.5" DISKETTES	BULK	BOXED*
ss/dd-Blue	1.39	1.54
ss/dd-Beige	1.39	1.54
ds/dd-Blue	1.59	1.74
ds/dd-Beige	1.59	1.74

MAGNETIC TAPE	
600' in tape seal	6.99
1200' in tape seal	8.99
2400' in tape seal	11.99
2400' easy load II	12.99

Quality & Service Our #1 Priority
Buy direct — no middle man
No mumbo jumbo

8" DISKS	BULK	BOXED*
ss/dd soft sector unformatted	1.49	1.74
ss/dd soft sector unformatted write protect	1.49	1.74
ds/dd soft sector unformatted	1.69	1.94
ds/dd soft sector unformatted write protect	1.69	1.94
ss/sd 32 hard sector unformatted	1.49	1.74
reversible sd 32 hard sector unformatted	1.49	1.74
ss/dd 32 hard sector unformatted (WANG)	1.49	1.74
ds/dd 32 hard sector unformatted (WANG)	1.69	1.94

8" COLOR DISKS	BULK	BOXED*
ss/dd color pack assortment A †	1.69	1.94
ds/dd color pack assortment A †	1.89	2.14

8" DISKS/formatted	BULK	BOXED*
ss/sd 26 soft sect IBM 2305830 (26/128)	1.99	2.24
reversible sd 26 soft sect IBM 2305830	1.99	2.24
ds/sd 15 soft sect IBM 2736700	1.99	2.24
ds/sd 26 soft sect IBM 1766872 (26/256)	1.99	2.24
ds/dd 8 soft sect IBM 1669045 (8/1024)	1.99	2.24
ss/dd soft sect DEC RX02 format	1.99	2.24

8" DISKS/formatted	BULK	BOXED*
AM 425	2.49	2.74
AM Varityper	2.49	2.74
Compupro	2.49	2.74
CPT 6000, 8000, 8500 compatible	2.49	2.74
Data General 6100	2.49	2.74
Data Point ss or ds	2.49	2.74
Lanier Shared Logic	2.49	2.74
MICOM 2000 compatible	2.49	2.74
DISPLAYWRITER I IBM 4498905	2.49	2.74
DISPLAYWRITER II IBM 4498959	2.49	2.74
OFFICE SYSTEM 6 IBM 1669959	2.49	2.74
Xerox 820	2.49	2.74
Xerox 820 plus	2.49	2.74

Lifetime warranty on disks. Satisfaction guaranteed or money refunded within 30 days. Checks (allow 10 days to clear), money orders, MasterCard, Visa, American Express, C.O.D. (add $1.90). Purchase orders accepted from qualified public institutions, government agencies and well-rated companies, net 30 days. California residents add 6%. For information, call (619) 942-9998.

*BOXED — SHIPPED 10 TO A PLASTIC STORAGE CASE
BULK — SHIPPED 10 TO A POLYPAK
MINIMUM ORDER — 30 DISKS

800-992-1992 NATIONAL **ORDER TODAY** **800-992-1993 CALIFORNIA**

511-104 Encinitas Blvd.
Encinitas, CA 92024

U.S/DISK, INC.

Hours Mon.-Sat.
8:30 am - 4:30 pm
Pacific Time

RIBBON WAR

LIBERTY PREMIUM QUALITY PRINTER RIBBONS

America's most complete selection of printer ribbon. And of course you get our famous DIRECT-TO-YOU, no middleman prices. Our ribbon is factory fresh and manufactured from the finest quality fabric, ink, and mylar film. Every ribbon is tested for density, durability, and consistency — from ink cartridge to rewind mechanism. If you don't see your printer listed, please call our order hotline and we will locate it for you. MINIMUM — 3 RIBBONS. Ribbon is shipped same day if ordered before noon. Colored ribbon available for most models — 20% upcharge. All colored ribbon factory fresh. Maximum ink retention. Great quality. Consistently crisp print. Long life.

CORRECTABLE

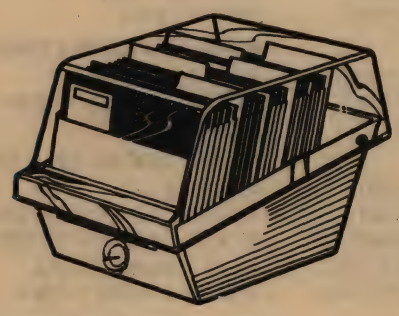
Adler/Satellite/Naka	3.99	IBM Selectric 71	1.99
Brother EM60/200	3.99	IBM Selectric II	2.99
Canon AP200	4.99	Olivetti ET 201/221	3.99
Comrex II	3.99	Olivetti ET 101	3.99
Diablo 620	3.99	Olivetti TES 401/501	3.99
IBM Electronic Typewriter	5.99	Olympia ES 100	2.99
IBM Sel III 210	4.99	Xerox Memorywriter	3.99

NYLON

Anadex 9500	4.99	NEC Spinwriter 8850	4.99
Apple Imagewriter I, II	2.39	Okidata 82/83/92/93/801	.99
Brother HR-15	4.99	Okidata 84/94	2.19
Burroughs 9247	18.99	Panasonic 1093	2.99
C. Itoh Prowriter	2.39	Panasonic KXP 1090, 91, 92	6.29
Centronics 101/102/103	4.49	Printronix P300	5.49
Centronics 350/353	5.49	Qume I (Square Corner)	2.99
Centronics 704	5.19	Qume IV	3.49
Commodore MPS 801	3.99	Qume Letterpro 20	3.49
Commodore MPS 803	4.99	Radio Shack DMP 2100	2.99
Data General LP2 Dasher	5.99	Radio Shack DMP 400/420	2.99
Data Products M200	3.89	Radio Shack DMP 100	3.99
Data Products B300	5.59	Radio Shack DMP 110	3.99
Diablo 630 API/ECS	2.99	Radio Shack LP, VI, VIII	2.99
Diablo Advantage D25	2.99	Radio Shack LP3, IV, V	3.99
Diablo Hytype I	3.99	Ricoh 1300/1600	3.99
Diablo Hytype II	2.99	Star Gemini 10X/15X	.99
Digital LA 30/36	2.39	Toshiba P 1350	2.99
Digital LA 34	2.79	Tritel (Data Royal)	2.59
Epson LQP 1500	2.99	Wang-5 (Daisy Wheel)	3.99
Epson MX/FX/RX 100/185	3.19	Radio Shack LPVII	3.99
Epson MX/FX/RX 70/80/85	2.39	Adler Lift-Off Tape	1.99
Epson MX100 Zip Pack	4.99	Burroughs B800/L9000	3.99
G.E. Terminet 340	29.99	Data Saab	3.99
IBM 3262	5.99	Diablo 620 Lift-Off	1.99
IBM 5211	4.99	Diablo Hytype II Matrix	4.99
IBM 5224 Baseball Bat	13.99	Digital LA 120/180	3.99
IBM 5225	15.99	Epson LX 80	2.99
IBM 5242 Large Handbag	2.59	IBM 50/60/65/75/85 L-O	3.99
IBM 5256 Silver Dollar	2.99	IBM Proprinter	3.99
IBM Selectric 72	2.99	IBM Sel II Lift-Off Tape	1.99
Mannesman Tally 1000	3.69	IBM Sel II Tech III	3.99
NCR 2140	3.39	Juki 6000/6100	3.99
NEC 3500	4.99	Mannesman Tally MT 100	2.99
NEC 8023A	2.39	Mannesman Tally MT 180	3.99
NEC Pinwriter P1/P2	4.99	Okidata 182/192	3.99
NEC Pinwriter P3	4.99	Olivetti ET Lift-Off	1.99
NEC Spinwriter 3550	4.99	Tally Honeywell	2.59
NEC Spinwriter 5500-7700	3.99	Texas Instruments 850/855	3.99

MULTI-STRIKE

Adler/Satellite/Naka	3.99
Apple Scribe	4.99
BMC 80	4.99
Brother HR-15	4.99
Diablo 620	3.99
Diablo 630 API/ECS M/S	2.99
Diablo Advantage D25 M/S	2.99
Diablo Hytype II	2.99
IBM 6240	2.99
IBM Displaywriter 5218	5.99
Legend 880, 808	4.99
NEC 3500	4.99
NEC 5500-7700	3.99
Olivetti ET 201/221	4.99
Olivetti ET 101	4.99
Qume 6240	2.99
Qume I (Square Corner)	1.99
Qume IV	3.49
Qume Letterpro 20	3.49
Ricoh 1300/1600	2.99
Tally Spirit 80	4.99
Wang-5	2.29
Xerox 850/860	2.99



THE "CARETAKERS"™

40 disk storage case 3.50" w/lock	7.99
50 disk storage case 5.25" w/lock	7.99
100 disk storage case 5.25" w/lock	9.99

ACCESSORIES

Drive head cleaning disk 3.5/5.25/8"	12.99
Tyvec sleeves white — pkg. of 100	5.99
Tyvec sleeves color pack pkg. of 100	8.99
ID labels/90 write protect tabs pkg. of 100	1.99
Disk mailer box (holds 3/5.25") pkg. of 10	8.99
Disk mailer box (holds 3/8") pkg. of 10	9.99

800-992-1992 NATIONAL **ORDER TODAY** **800-992-1993 CALIFORNIA**

511-104 Encinitas Blvd.
Encinitas, CA 92024

U.S/DISK, INC.

Hours Mon.-Sat.
8:30 am - 4:30 pm
Pacific Time

PC ACCESSORY SALE!!!

Data/Com South

Data/Com South, one of the nations premire distributors has begun selling direct to the end user! Beginning with this ad, you will find unprecedented bargins. Wholesale prices, **or better,** that have no initial membership fees or additional percentages to be added on. Not only savings, but **quality products.** Ones you can rely on now and in the future. Names like **AST, IOMEGA, NEC, TEXAS INSTUMENTS,** etc. Clone prices, but no names like **HERE-TODAY/GONE-TOMMORROW. So take a look at these savings, decide what you want, and call immediately** because **quantities are limited.**

CALL Data/Com South AND ASK FOR KATE AT: National 1-800-223-3266 - In Florida 1-800-432-6270.

AST

AST MULTIFUNCTION CARDS:

SPK-384	SIX PAK PLUS 384K	$268.50*
SPK-128	SIX PAK PLUS	148.50
SPK-000G	GAME PT KIT FOR 6PK	15.00
MGII-256	MEGA PLUS II 256K	149.00
MGII-128	MEGA PLUS	99.00
MC-64SPC	COMBO PLUS	118.50
MGO-123-S	MONOGRAPH PLUS	129.00

AST MEMORY EXPANSION:

MPII-384	PC CARD W/ 384K	$199.00
MPII-256	PC CARD W/ 256K	159.00
MPII-128	PC CARD W/ 128K	99.00
MPII-064	PC CARD W/ 64K	69.00
MG-0009	64K MEM EXP/PARITY	9.00
	MEM TESTING PROGRAM	4.50

AST I/O EXPANSION:

I/O	PLUS II	$ 55.00
I/O-000G	GAME PORT	15.00
I/O-000P	PRINTER PORT	15.00
I/O-000S	SERIAL PORT	15.00
MG-000G	GAME PORT	15.00
MG-000P	PRINTER PORT	15.00
MG-000S	SERIAL PORT	7.50

AST MAINFRAME COMMUNICATION:

AST 3780	3780 EMULATION	$268.50*
AST SNA	SNA/SDLC EMULATION	268.50
AST 5251	5251 EMULATION	237.00

AST LOCAL AREA NETWORKS:

NTP-002	PCNET II KIT	$327.00
NTP-001	NTWK CARD W/ SFTWR	148.50
NTP-001R	NTWK CARD W/ REPTR	134.00
NTP-C050	50 FT TRUNK CABLE	7.50
NTP-C100	100 FT TRUNK CABLE	12.00

WESTERN GRAPHTEC PLOTTERS

1000CE	PLOTTER PKG/RS232	$299.50
1000GP	PLOTTER PKG/GPIB10	299.50
1000RS	PLOTTER PKG/RS232	274.50*

DATA PRODUCTS PRINTERS

DP35	DP35-1 SRL PRINTER	$699.00
DP55	DP55-1 SRL PRINTER	899.00

GENCOM PRINTERS

GE3024	MODEL 3024 PRINTER	$ 610.12*
GE3184	MODEL 3184 PRINTER	968.10*
GE3204	MODEL 3204 PRINTER	1213.50
GE3300	MODEL 3300 PRINTER	978.75*
GE3404	MODEL 3404 PRINTER	1094.80*

MICROCOM MODEMS

SX2400	300/1200/2400 BD	$566.43*
SX1200	3300/1200 BD	302.22*
ERA2PC	SYS FOR IBM PC	251.50*

UDS MODEMS

212A/D	3/1200 BPS, AUTO DL/AN	$ 127.73*
212LP	1200 BPS, LINE PWRD	186.30*
9600A/B	HD 2W, DIAL OR PRV	1077.30*
EC100	SYNC TO ASYNC, 9600	289.58*

PRINTEK PRINTERS

910	CORR QLTY, SRL & PRL	$599.25*
920	CORR QLTY, SRL & PRL	824.25*
930	MODEL 930 PRINTER	749.25*

PTI ACCESSORIES

1200	DATA SHLD BACK UP PWR	$128.25*
300	64K DATA BUFFER	70.00*

NEC

NEC 2000 SERIES PRINTERS:

NEC2010	W/ ANSI SERIAL I/F	$420.00*
NEC2015	W/ DIABLO SRL I/F	437.50*
NEC2050	W/ IBM PC PRL I/F	468.87*

NEC 3500 SERIES PRINTERS:

NEC 3510	W/ ANSI SERIAL I/F	$796.00*
NEC3515	W/ KSR, ANSI SRL I/F	796.00*
NEC3530	W/ CENTRONIX I/F	956.00*
NEC3550	W/ IBM PC PRL I/F	846.66*

NEC 5500 SERIES PRINTERS:

NEC5530	MODELS 5530	$ 974.00*
NEC5540	MODEL 5540	1124.25*

NEC 7700 SERIES PRINTERS:

NEC7715	W/ DIABLO SRL I/F	$1012.50*

NEC 8800 SERIES PRINTERS:

NEC8830	W/ CENTRONIX I/F	$1177.00*

NEC PRINTER ACCESSORIES:

3500BIDI	3500 BI-DI TRCTR FD	$ 96.00*
3500CSF	3500 CUT SHEET FD	432.00*
3500CSG	3500 CUT SHT GUIDE	40.10*
3500BA	3500 2 BIN ADAPTOR	100.00*
3500EA	3500 ENV ADAPTOR	112.00*
3500FI	3500 FRONT INSERTR	150.00*
4123SF	MDL 4123 SHEET FD	225.00*
7700CSF	7700 CUT SHEET FD	630.00*
ZIZ104	MECH SHT FD 20/3500	125.00*

IOMEGA

CDS-PC10	SINGLE 10MB CART SYS	$ 922.91
CDS-PC20	DUAL 10MB CART SYS	1006.00*
CDS-PC20	DUAL 10MB CART SYS	1262.91

NOVATION MODEMS

103SC	SMART CAT 300 BD	$ 49.50
3/12SC	SMART CAT (212 CMP)	129.50*
APCAT2	APPLE CAT II	84.50
APCAT212	APL CAT II (212 CMP)	199.00
AUTOCAT	AUTO ANSWR/ORG	81.00
CAT	D-CAT ANSWR/ORG	63.20*
INFONE	INFONE TRMNL MAXI	199.50
JCAT	J-CAT AUTO MINI MDM	45.00

PENRIL MODEMS

3/12AD	300/1200 AUTO DIAL	$255.00*
3/12	300/1200 STAND ALONE	162.53*
4-19.2	4-19.2 STAND ALONE	234.00*
4-19.2	PSH 4-19.2 RACK MNT	231.75
8192RE	8192 RACK MOUNT	276.00*
8801ACU	8801C AUTO CALLER	224.25*

RIXON MODEMS

COMMUX4	COMMUX 4 CHANNEL	$ 999.50*
COMMUX8	COMMUX 8 CHANNEL	1399.50
DCX815	4 CHML MULTIPLX	449.50
PC212	PC MDM W/ CROSSTALK	191.79*
R103J	DESK MODEM	45.00
R212AIT	INTELLIGENT MODEM	149.50*
R212A	212A STAND ALONE	231.30*
R212EXC	212EXEC 3/12, AUTO	292.42

TEXAS INSTRUMENTS

T/I DATA TERMINALS:

703ACOU	703 ACOUSTIC CPLR	$ 49.60*
707PORT	707 PRTBLE TELEPRNTR	344.80*
745	745 TELEPRINTER	399.50*
765	SILENT MEMORY TRML	799.50*
781RO	RECEIVE ONLY TELEPRNTR	349.50
785	SILENT TELEPRINTER	599.50*

T/I PRINTERS:

810LQ	MDL 810, LQ BASIC	$711.50*
820RO	RECEIVE ONLY, BASIC	978.15
840KSR	KSR BASIC PRINTER	249.50*
850	MDL 85-C W/O TRCTRS	464.00*
865	132 COL W TRCTRS	724.50

*Asterik items are demo model prices. Similar prices on other demos and new models. Call for price and availability. Dealer and corporate inquiries welcome. Quantity discounts available. Full warranties available.

COMPUTER SOLUTIONS

WE SHIP EVERYTING FREE! 1-800-331-0926

PRINTERS

BROTHER/DYNAX
DX-15XL LQ 20 CPS 80 COL 349
HR-25 LQ 25 CPS 132 COL 465
HR-35 LQ 35 CPS 132 COL 709
DH-45 36 CPS/LQ 140 CPS/Dot Mat 845
DM-40 40 CPS 132 COL 836

CITIZEN
120D 120CPS 80 COL 189
MSP-10 160/40 CPS 80 COL 269
MSP-15 160/40 CPS 132 COL 385
MSP-20 200/50 CPS 132 COL 329
MSP-25 200/50 CPS 132 COL 485
Premiere 35 35CPS 132 COL 8K Buffer 485

EPSON
LX-80 100 CPS 80 COL 239
FX-85 New 160 CPS 80 COL ....CALL
FX 286 NEW 200 CPS 132 COL NLQ BD ....CALL
LQ-800 NEW 180 CPS 80 COL ....CALL
LQ-1000 NEW 180 CPS 136 COL ....CALL
SQ-2000 Inkjet 176/106 CPS 136 COL ....CALL
HI-80 Color Plotter 4 Pen ....CALL
HS-80 Port Inkjet 160/32 CPS 80 COL ....CALL

FUJITSU
DX-2100 NEW 220 CPS 80 COL w/Tractor 359
DX-2200 NEW 220 CPS 136 COL w/Tractor 469
Color Option JX-80 Compatible 150
DL2400 ....CALL

GENICOM ....CALL FOR PRICING

HEWLETT-PACKARD
7475A 6 Pen Plotter ....CALL
7550 8 Pen Plotter ....CALL
Laserjet ....CALL
Laserjet + ...CALL

IBM
Proprinter 200 CPS 80 COL ....CALL
Proprinter XL 200 CPS 132 COL ....CALL
Quietwriter II ....CALL

JUKI
6000 LQ 195
6100 LQ 18 CPS 132 COL ....CALL
6300 LQ 40 CPS 132 COL ....CALL

NEC
3550 ....SPCL
P560 P Dual 240/100 CPS 132 COL ....CALL
P565 P/S Dual 240/100 CPS 132 COL ....CALL
P560 XL 240/100 CPS 132 COL Color ....CALL
P565 XL 240/100 CPS 132 COL Color ....CALL

OKIDATA
ML182 120 CPS 80 COL 225
ML183 120/30 CPS 379
ML192 160/40 CPS 80 COL 335
ML193 160/40 CPS 136 COL ....CALL
ML84 200/50 CPS 136 COL 639
ML93 160/40 CPS 136 COL ....SPCL
ML292 200/100 CPS 80 COL 509
ML293 200/100 CPS 136 COL 649
2410 350/85 CPS 136 COL 1725
Okimate 20 W/Interface Color ....CALL

PANASONIC
KXP-1080 NEW 100CPS/20CPS NLQ 80COL 219
KXP 1091 · 120 CPS 80 COL 249
KXP 1092 120/29 CPS 132 COL 339
KXP 1592 180CPS 16.5"Carriage 465
KXP 1595 240CPS/51CPS NLQ 16.5" ....CALL
KXP 3131 17CPS LQ 269
KXP 3151 22 CPS LQ 136 COL 409

QUME
Letterpro 20 Plus ....CALL
Sprint 11/40/55/90 ....CALL

SILVER REED
EXP550 P 18 CPS 132 COL 285
EXP800 40 CPS 132 COL ....CALL

STAR MICRONICS
NX-10 ....CALL
SG-15 120 CPS 132 COL 379
SD-10/15 160 CPS 80/132 COL ....CALL
SR-10/15 200 CPS 80/132 COL ....CALL
NB-15 300 CPS 132 COL ....CALL

TEXAS INSTRUMENTS
TI-855 150/35 CPS 80 COL ....CALL
TI-865 150/35 CPS 80 COL ....CALL

TOSHIBA
P321P/S 216/72 CPS 80 COL 475
P351 P/S 288/100 CPS 132 COL 995
P341 P/S 216/72 CPS 80 COL 725

BOARDS

AST
Six Pack Plus 64K IBM PC 145
Six Pack Plus W/384 IBM PC 199
Six Pack Premium W/512K 359
Preview Mono Card (Lotus) W/PP 239
Color Graphics PX/XT 189
Rampage EMS SPEC PC/XT 259
Ramvantage w/128K P/S PC/AT 249
Advantage IBM AT w/128K 349
3G EGA 256K w/PP 349
I/O Plus C/S 125
5251-11 Comm. CD PC/XT 555
5251-11 Plus Comm. CD PC/XT 615
5251-12 Comm. CD PC/XT 485

DCA CALL FOR PRICING

HERCULES
Monographics w/PP(LOTUS) 195
Color Card w/PP 159

INTEL
Above Board IBM PC/XT ....CALL
Above Board IBM PC/AT ....CALL

ORCHID
Turbo EGA 599
Conquest (EMS) P/S/CLK 289
Excell Multi Board w/OK ECC, EMS IBM/AT 419
Cramram Short Slot MEM Exp BD 256-2MB 269
EGA Board 339
Call For Additional Boards

PARADISE
Modular Graphics Card 265
Multi Display Card 199
5B Pack Multi-Function 119
Color/Mono Card 149
EGA Card (NEW) 395

PERSYST
Monochrome BD w/PP 135
Color Graphics Card w/PP 155
Bob Board 345
Bob-MG Mono/Color w/PP 179
Bob 16-EGA 505
Mono Combo Card w/OK/PC/XT 285
Color Combo Card w/OK PC/XT 285
Mono Combo Card w/128K PC/AT 389
Color Combo Card w/128K PC/AT 449
Mega Memory w/Ok PC AT 269
Short Memory Ramboard w/384K 195
Stretch EMS OK 219

QUADRAM
Quadboard Multi w/64K 159
Quadboard Multi w/384K 219
Silver Quadboard OK, P/S/C 235
Gold Quadboard OK, Color/P/S/C 379
Liberty Quadboard w/OK-2MB PCAT 219
Microfazer Print Buffer PP 8K 135
Quad EGA + ...365
Quad EMS + PC/XT EXP-2MB 329
Super Sprint IBM PC/XT 449

RACORE
Memory Expansion Board w/256K PC JR. 189
Memory Expansion Board w/512K PC JR. 249

SIGMA DESIGNS
Color 400 Card Tax640/SR12 449
Maximizer Multi-function w/OK PC/XT 169
Maximizer Mulit-function w/OK PC/AT 259
Color 350 EGA 385

STB
Monochrome Card PP 135
Graphics Plus II 225
Chauffeur Mono (LOTUS) 219
SR-400 Color (Taxan 640) 279
EGA Board 289
Memory Companion EMS Special 209

TECMAR
Maestro-AT w/128K 269
Captain Multi-Function w/OK 129
Captain Multi-Func w/384K 209
Graphics Master 295
640 Plus EMS Spec 256K-2MB 205
5251-11 Comm. Card 559
Jr. Captain w/128K PC Jr. 239
Jr. Cadet w/64K 179
Jr. Cadet w/384K 239
EGA BOARD ....CALL
CALL FOR ADDITIONAL BOARDS

TSENG LABS CALL FOR PRICING

VIDEO 7
MGA + Hercules Graphics w/PP 199
Vega EGA ....SPCL

MONITORS

AMDEK
300G 12" Green Composite 135
300A 12" Amber Composite 145
310A 12" Amber IBM 165
Color 600 Hi RES RGB IBM ....CALL
Color 722 Hi Res RGB IBM EGA 499
Color 725 Hi Res RGB AT&T ....CALL
Color 730 Super Res RGB PGA ....CALL

IBM
Monochrome 12" Green 229
Color 12" Color 545
Enhance Color 12" Color EGA ....CALL

NEC
JC1401 13" RGB Multisync IBM 545

TAXAN
115 12" Green Composite 125
116 12" Amber Composite 129
121 12" Green IBM/TTL 145
122 12" Amber IBM/TTL 155
620 12" Color IBM 395
630 12" Color IBM 439
640 12" Color IBM 495
555 Board 630/640 185

PRINCETON GRAPICS
Max-12 12" Amber IBM 169
HX-12 12" Hi Res RGB IBM 409
SR-12 12" Super Hi Res RGB IBM 565

ZENITH ....Call for Pricing
QUADRAM ....Call for Pricing

MODEMS

ANCHOR AUTOMATION
Signalman Lightning 2400 395

AST
Reach 1200 Baud Int/1/2 CD w/crosstalk 349

HAYES
Smartmodem 1200 Baud 385
Smartmodem 1200B w/Soft 345
Smartmodem 2400 Baud 589
2400B INT ....CALL

NOVATION
2400 Baud w/Mite 529
2400 Baud w/o Software 485
2400 EXT Professional w/o Soft 539

QUADRAM
Quadmodem II 1200 Half-card w/crosswalk 285
Quadmodem 2400 Hardcard w/crosstalk 445

RACAL VADIC
1200 EXT/INT W/Soft 239
2400 EXT/INT W/Soft 419

U.S. ROBOTICS
Password 1200 Baud 229
Courier 2400 Baud 409
Microlink 2400 INT 409

VENTEL
PCM-XT 1200 Internal w/Crosstalk 355
2400 EXT 449
2400B INT w/Crosstalk 449

TERMINALS

IBM
3161-11 12" ASCII ....CALL
3163-11 Emulate IBM3101.DEC VT52. VT100 ....CALL
3164-11 Color 3161-11 ....CALL

KIMTRON
KT-7PCA12 12" Amber/Green ASCII IBM 475
KT-7PCA14 14" Amber/Green ASCII IBM 495

LINK ....CALL FOR PRICING

QUME
QVT 101G 14"HZ-1500/TV910/ADM3A/5 309
QVT 101A 14" HZ-1500/TV910/ADM3A/5 349

WYSE
WYSE-30/14" TV1910,925/ADM 3A/5,31,A2319
WYSE-50 14" TV1910/LS131/HAZ1500 449
WYSE-60 14" Green/Amber 519
WYSE-85 14" DEC VT-200/VT100/VT-52 465
WYSE-85+ 14" Amber Same as above 515
WYSE-700 B/W Graphics System ....CALL

★ CALL FOR PRICES ON ...
IBM, AT&T, COMPAQ, ZENITH, & EPSON COMPUTER SYSTEMS

★ CORP. & SCHOOL PURCHASE ORDERS ACCEPTED

DISK DRIVES/BACKUP

IOMEGA
Bernoulli Box 10 meg ....CALL
Bernoulli Box Dual 10 meg ....CALL
Bernoulli Box 20 meg ....CALL
Bernoulli Box Dual 20 meg ....CALL
Interface card ....CALL

MOUNTAIN
Drivecard 20 Meg Int/Board ....CALL
Drivecard 30 Meg Int/Board ....CALL

RACORE
Expansion Chassis Floppy PCJR 465
Expansion Chassis 10 Meg w/DMA PCJR 895
Expansion Chassis 20 Meg w/DMA PCJR 1195

SEAGATE
ST-213 10 meg Int Half-HT 305
ST-225 20 meg Half-HT 365
ST-4026 20 meg Full Height ....CALL
ST-4038 30 meg Full Height ....CALL
ST-4051 40 meg Full Height ....CALL

TALLGRASS, TECMAR, and WESTERN DIGITAL. CALL FOR PRICING

SOFTWARE

ACCOUNTING
MBSI Real World AR/AP/GL ....CALL
BPI General Accounting AR/AP/GL 319
Peachtree Back to Basics 229

BUSINESS
CPA: + ...355
Total Project Manager 299
Graphwriter Combo Set 329
Graphic Comm. Freelance 215
Software Group Enable 359
Sorcim Super Project Plus 289

COMMUNICATIONS
Crosstalk XVI 115
Smartcom II 99
Remote 109
Microsoft Access 165
Transporter 175

DATA BASE
DBase III + ...CALL
RBase 5000 369
PF5:File 89
RBase 6000 ....CALL
Cornerstone 95
Knowledgeman 309

HOME/PERSONAL/ENTERTAINMENT
Dollars & Sense V 2.0 115
MECA Managing Your Money 2.0 115
Evelyn Wood Dynamic Reader 75
Springboard Newsroom 45
Print Shop 45
Sublogic Jet 39
Microsoft Flight Simulator 39
Micropose F-15 Strike Eagle 35
Micropose Solo Flight 35
Hayden Sargon III 39
Broderbund Ancient Art of War 35
Activision Ghostbusters 29
Infocom Hitchhikers Guide to Galaxy 35
Spectrum Holobyte Gato 29
APBA Major League Baseball 55

INTEGRATED/SPREADSHEETS
Lotus 1-2-3 V .2 329
Symphony ....CALL
Framework II ....CALL
Multiplan 139

UTILITIES
Sideways 45
Sidekick or Toolbox 35
Super Key or Turbo Pascal 49
Turbo Lightening 69
Turbo Editor Toolbox 49
Reflex 99
Turbo Pascal w/8087 75
Turbo Gameworks 49
Turbo Prolog 75
Norton Utilities 3.1 59
PF5: Report 79
PF5: Proof 65
Microsoft Macro Assembler 105
Fortran Compiler 219
Basic Compiler 245
Cobol Compiler 415
Pascal Compiler 185

WORD PROCESSING
Multimate ....CALL
Word Perfect ....CALL
Easy ....CALL
New Word ....CALL
Microsoft Word ....CALL
Word Star 2000 ....CALL
Word Star 2000 + ...CALL

ORDERING INFORMATION AND TERMS: We accept MC/VISA, MONEY ORDERS, CASHIERS CHECKS, QUALIFIED FORTUNE 1000 CHECKS IMMEDIATELY HONORED. Personal and company checks allow 20 days to clear. QUALIFIED FORTUNE 500 COMPANY PURCHASE ORDERS ACCEPTED. WE SHIP COD ORDERS WITH 25% DEPOSIT. ALL ORDERS SUBJECT TO A 3% PROCESSING AND HANDLING CHARGE. Prices subject to change without notice. Not responsible for type errors. N.Y. & Florida residents add sales tax. This ad supersedes all previously published ads. Certain merchandise not available for mail order. No merchandise accepted for return without a return authorization number. Returned merchandise is subject to a 0% - 20% restocking fee. All cancelled orders subject to a 15%. Not responsible for machine compatibility. Manufacturer's warranty applies to most items. Defective items repaired or replaced at our discretion. ALL SALES FINAL.

MAIL ORDER ADDRESS:
4700 HIATUS ROAD
SUITE 257
SUNRISE, FLA. 33321
TO ORDER ONLY CALL:
1-800-331-0926

170 BROADWAY
SUITE 201
NYC, NY 10038
FOR INFORMATION CALL:
305-749-8300

IBM PC/XT/AT COMPATIBLE PARTS — MAGITRONIC — IN STOCK

XT-800 BASIC SYSTEM

- Slide out case
- Power supply
- 640K expandable mother board/256K installed
- Floppy disk card
- XT Keyboard
- MS-DOS 2.1
- Fully tested
- F.C.C. Approval $410

EXECUTIVE AT-100 SYSTEM THIS MONTH SPECIAL

- Monochrome Monitor $79
- 200W Power Supply/Case $200
- 80286 Mother Board W/BIOS $495
- 1024K Memory $108
- 1.2 M Drive $149
- 20 MB Hard Disks $399
- AT HCD/FDC $200
- Parallel/Serial $45
- Monochrome Graphic $65
- AT Keyboard $70
- Assembly & Tested $85

TOTAL: $1,895—

MODEM

SMARTEAM EXTERNAL MODEM
- Auto answer, dial, redial compatible w/Hayes
- 300-1200 Baud $165

CHALLENGER EXTERNAL MODEM
- Fully compatible w/Hayes 1200
- Auto dial, answer, redial
- 300-1200 baud
- FCC Approved $129

EASY DATA 1200 INTERNAL MODEL
- Internal half card 300/1200 baud • Fully Hayes compatible • PC-Talk communication software included $129

2400B DISCOVERY EXTERNAL MODEM
- 0-300, 600-1200, 2400 BPS
- Compatible Bell 103/212A and CCITTV.22
- Auto-Answer, Auto-Dial $320

PC/XT/AT ADD-ON BOARDS

MGB-101 XT Motherboard
- 16-bit 8088 (optional 8087 co-processor) 8K BIOS ROM
- 8 Super-XT compatible expansion slots
- Memory Expandable to 640K $105

MGB-102 MULTIFUNCTION CARD
- Memory from 64K to 384K
- Serial port/joystick port/parallel printer port
- Calendar/clock function $78

MGB-103 MONOCHROME/GRAPHIC CARD
- 80x25 text mode
- 64K graphic display memory $65

MGB-103-1 MONOCHROME GRAPHIC/PRINTER
- 80x25 text mode, printer interface
- 64K graphic display memory $75

MGB-104 COLOR GRAPHIC CARD
- RGB Color port, light pen interface
- Graphic mode 320x200, 640x200
- Text mode 40x25, 80x25 ..... $60

MGB-105 (1 PORT) MGB-105-1 (2 PORT) FLOPPY DISK CONTROLLER
- Drives 2x5¼ FDD, IBM fully compatible 5¼ 500K type, DS/DD
- 1 Port ..... $29 • 2 Ports $38

MGB-106 (1 PORT) MGB-106-1 (2 PORT) RS-232 CARD
- A Fully buffering eliminates the need for a precise synchronization
- Independent receiver clock input
- 1 Port ..... $25 • 2 Port $30

MGB-107 GAME I/O CARD
- 2 games control I/O port $20

MGB-129 CLOCK CARD
- Build-in calendar, real time clock $29

MGB-108 XT 512K RAM BOARD
- Memory capacity expandable to 512K
- Fully buffered $44

MGB-109 XT PARALLEL PRINTER CARD
- Fully IBM Epson printer & compatible ... $21

HARD DISK CONTROLLER
- **MGB-110** • 6210-control 2 hard disk drives $105
- **MGB-133** • 6220-2 in 1 controller connect with 2 HDD & 2 FDD w/built in ECC $125

MGB-111 COLOR GRAPHIC/PRINTER
- RGB color port, light pen interface
- Graphic mode: 320 dots x 200 lines color, 640x200
- Text mode: 40x25, 80x25, w/printer port .. $70

MGB-113 XT 640K RAM CARD
- Memory capacity to 640K
- Fully buffered $46

MGB-128 XT TURBO BOARD
- 16 bit 8088-2, 8 MHz CPU
- Clock speed 1.7 times faster than normal XT
- Memory expandable to 640K $130

MGB-131 XT I/O PLUS II
- 2 RS-232 port (1 optional)
- 1 parallel printer port/clock/calendar
- 1 game port $49

MGB-132 XT MULTI I/O CARD
- Floppy disk adapter drives 2x5¼ FDD
- 2 RS-232, 1 game port and 1 printer port
- Clock/Calendar $79

EVEREX EGA
- 640x350 graphics in 16 colors from a palette 64 ..... $285

MGB-202 AT 3M MULT CARD
- 3M Bytes memory expansion
- 2 RS-232, 1 printer, 1 game $179

MGB-205 1.2M FLOPPY C/CD
- Capacity unformate 1604K Byte, formate 1.2 Byte
- Operation system DOS 3.0/Xenix $79

MGB-205-1 AT 1.2M/360K FLOPPY CARD
- 1.2 High capacity drive/360K floppy drive $119

MGB-208 AT 2.5M RAM CARD
- Expandable to 2.5MB both 4164 and 41256
- Starting address selectable, fully tested $105

MGB-102-1
- 768K Multifunction $72

MGB-231 AT I/O CARD
- 1 Parallel port, 1 game, 2 RS232 ..... $80

MGB-109-1 SERIAL/PARALLEL AT/XT
- AT/XT Switchable
- 1 Serial, 1 parallel printer $45

GROUNDED CABLES ROUND SHIELDS

8510 — COMPUTER TO PRINTER CABLE
DB25 pin male to 36 pin Centronics male D
6 ft ..... $7 15 ft $8
10 ft $7.50

8511 RS-232 SERIAL CABLE
RS-232 DB 25 pin female to DB 25 pin female. For use with IBM serial printers.
6ft $7

8512 — COMPUTER TO PRINTER CENTRONICS CABLE

36 pin Centronic male 36 pin Centronic male		25 pin Centronic male to 25 pin Centronic male	
6 ft	$8.50	6 ft	$7.50
10 ft	$9.50	10 ft	$8.50

8513 — 232 SERIAL CABLE
DB 25 pin male to 25 pin female. For use with IBM & compatible computer to serial printers.
6 ft $7
10 ft $8

8514 RS-232 SERIAL CABLE
DB 25 pin male to DB 25 pin male
6 ft $7
10 ft $8

8515 — COMPUTER TO MODEM CABLE
DB 25 pin male to DB 25 pin female, pins 1-8, 12, 20, 22 wired.
6 ft $4.50
10 ft $5.50
15 ft $6.50

8519 — COMPUTER TO MODEM CABLE
DB 25 pin male to DB 9 pin female, for IBM compatible AT to Modem.
6 ft $6
10 ft $7

8523 — COMPUTER TO PERIPHERAL CENTRONIC CABLE OR EXTENSION
36 pin Centronic male to Centronic female. 25 pins
6 ft $8.50
10 ft $9.50

8524 — GENDER CHANGER
DB 25 pin male to male $4

8525 — GENDER CHANGER
DB 25 pin female to female $4

4 WAYS SWITCH BOX — SERIAL
1 printer to 3 computers $35

4 WAYS SWITCH BOX — PARALLEL
3 printers to 1 computer $37

A/B SWITCH BOX — SERIAL
Selection of 1 printer from 2 computers ... $25.25

A/B SWITCH BOX — PARALLEL
Selection of 2 printers to 1 computer $27

POWER OUTLET STRIP
6-outlet strips with 3-prong plugs, surge protection for data protection, 6 ft. code with 15 amp. UL standard $9.99

CHASSIS

C-600-A AT JR. CASE
- XT Size
- AT Style
- Open Top $39

C-600 XT CASE
- For IBM XT boards & 5¼" disk drives
- Open top/slide off $29

C-700 AT CASE
- For IBM AT boards
- With lock key for extra security $99

POWER-SUPPLY

P-150 SWITCHING POWER SUPPLY
- 150 watt output
- Input: 110/120V±5%, 50/60 Hz
- 220/240±5% $65

P-200 SWITCHING POWER SUPPLY FOR IBM PC/AT
- Max. 200 watt output
- Input: 120/220V±5%, 50/60 HZ, 320Va max $115

POWER CENTER
100% burn-in test, short circuit protection. Meets UL/CSA/VDE standards $40

KEYBOARDS

K-139 AT/XT
- Large return key
- Keytronic $75

K-136 AT/XT KEYBOARD
- Software Switchable
- Large return key $70

K-135 — XT KEYBOARD
- Features separate nu. & cursor pads/LED caplock & num. lock $75

SAMSUNG MONITOR

- TTL 12" Green/Amber $79
- Color Monitors Available

ACCESSORIES

- 256K RAM Chip $3.00
- 64K RAM chip $1.25
- Keyboard cover Com $4.50
- Keyboard cover IBM $3.75
- DX100 Diskette box $8.00
- DX45 Diskette box $6.99
- Bar Code Reader $3.50
- Keyboard Drawer (wood) $39
- Teac ½ high drive $95
- Mitsubishi ½ Drive $95
- Seagate 20MB hard drive full height w/WD controller $420

ORDERS ONLY: 1-800-227-5454

MAGITRONIC TECHNOLOGY, INC.
9-02 43 ROAD, LONG ISLAND CITY, NEW YORK 11101

INFORMATION & NY ORDERS: 718-706-7670

* IBM XT/AT are registered trademarks of International Business Machines Corp.

HARMONY COMPUTERS

2357 CONEY ISLAND AVE., (BET. AVES. T & U) BKLYN, NY 11223
800-VIDEO84 or 800-441-1144 or 718-627-1000

Commodore 128
$269.95
STAR NX-10
$219.00

PANASONIC 1091
$211.95
IBM XT (268)
$1399.00

"PRINTER SPECIALS"

Brother HR 15XL	289	NEC P7	619	Star SD 10	264
Brother HR35	669	Okidata 192	279	Star SD 15	386
Citizen MSP 10	259	Okidata 193	454	Star SR 10	418
Epson LX80	189	Okidata 292 w/INTFC	468	Star SR 15	539
Epson LQ800	459	Okidata 293 w/INTFC	599	SR 10 SR 15 Sheetfeed	49
Epson LQ 1000	669	Panasonic KXP 1091	212	Star SB 10	489
Epson FX 85	309	Panasonic KXP 1092	289	Star NB 15	1099
Epson 286	459	Panasonic KXP 3131	234	Silver Reed Exp 550	279
IBM Proprinter	369	Panasonic KXP 3151	369	Silver Reed Exp 800	619
IBM Proprinter XL	539	Panasonic KXP 1080	179	Toshiba 1340	349
Juki 6100	359	Panasonic KXP 1592	399	Toshiba 341	639
NEC 3550	699	Pana 1595	559	Toshiba 351	949
NEC 8850	1029	Star NX-10	219	**Toshiba 321**	**434**
NEC P6	449	Star SG-15	331		

WOW! WOW! WOW!

IBM

AT Unenhanced	2549
AT Enhanced IBM	3499
AT Enhanced IBM 30 Meg	3999
IBM Monitor	219
IBM PC	849
PC XT 268	1399
PC XT Clone	359
IBM Pro Printer	369
AST Six Pack 384K	194
AST Advantage 128K	329
Hercules Color	139
Hercules Monochrome	179
Quad EGA+	339
STB EGA+	259
Multifunction Card	109
IBM Drive	104
8087 Chip	112
80287 Chip	174
Everex EGA+	219
Everex Graphics Edge	214
Everex Edge	219
Everex Graphics Pacer	189
Joystick for IBM	29

SEAGATE

Hard Drives	
20 Meg. No Controller	329
10 Meg. w/controller	369
20 Meg. w/controller	429
30 Meg. w/controller	499
30 Meg. AT	535
40 Meg. AT	760

Leading Edge Model D 256K
2 Dr. Monitor **$1199**

ATARI

130 XE	119
65 XE	89
1027 Printer	99
1050 Drive	116
Atari Writer +	37
Atari Modem	59
Comrex Printer	99
520 ST Color System	759
520 ST B & W System	629
ST 520 Keyboard	359
ST 520 Drive	99
ST 520 B & W Monitor	174
ST 520 Color Monitor	329

MODEMS

Hayes 1200	349
Hayes 1200B w/Smartcom	323
Hayes 1200B No Smartcom	293
Hayes 300	123
Hayes 2400	549
Hayes 2400B w/Smartcom	489
Hayes 2400B No Smartcom	459
Micromodern 2E	125
Promethias 1200	249
Promethias 1200B	139

APPLE

2E Enhanced w/128K & Apple Drive	899
Drive	159
Apple Drive	229

AT & T

256K 2-360K Drives	1499
640K 1-360K 1-20MB	1899

Leading Edge Model D 30MB
w/monitor **$1495**

MONITORS

Amdek 300 Green	113
Amdek 300 Amber	119
310 Amber	139
Color 600	369
Color 722	454
Princeton HX12	394
Princeton HX12E	479
Princeton Max 12E	148
SR12	529
Scan Doubler	159
Taxan 220	149
NEC Multisync	559

COMPAQ

Portable 256K 2-360K Compaq Drives	1499
Portable 256K 1-360K 1-20MB Hard	1899
Deskpro 640K 1-360K 1-20MB Hard	1999

COMMODORE

Commodore 128	269
1571 Drive	229
1670 Modem	159
Commodore 64	149
1541 Disk Drive	172
1702 Monitor	159
1802 Monitor	169
1902A Monitor	274
MSP 1000 Printer	228
Comrex Printer	109

Commodore Amiga 256K, DOS
Mouse, Amiga color monitor
$999

800-441-1144

Items reflect 4% cash or check discount. For your protection we check for stolen credit cards.
M/C & VISA welcome. Personal checks cause 4 week delay. Shipping & Handling charge extra.
Price and availability subject to change without notice.

Bulldog Celebrates "OCTOBERFEST" with some "Guten" Specials!

IBM

PC SYSTEMS

PC Convertible	$1595
256 K, 2 Drives	1150
256 K, 2 Drives Monochrome Monitor and Card	1385
256 K, 2 Drives Color Monitor & Card	1585

XT SYSTEMS

256 K, 1 Drive, 10 mb Hard Disk	$2050
256 K, 1 Drive, 20 mb Hard Disk	2150
256 K, 1 Drive, 10 mb Hard Disk Monochrome Monitor & Card	2289
256 K, 1 Drive, 20 mb Hard Disk Color Monitor & Card	2575

AT SYSTEMS

AT BASIC 256 K, 1.2 mb Floppy	$2595
512 K, 20 mb Hard Disk 1.2 Floppy	2995
512 K, 20 mb Hard Disk 1.2 Floppy Monochrome Monitor & Card	3225
512 K, 30 mb Seagate Hard Disk 1.2 Floppy	3195

Take hold of your future with AT&T 6300 PC. Now you can get all the features and speed you need at the right price. All AT&T Systems include Keyboard, Bit Image Graphics, Green Monitor, 256K DOS, and On-Board Clock Calendar.

2 Drive System	$1795
10 mb System	2095
20 mb System	2170
Upgrade to 640K	50
AT&T Color Monitor	675

MONITORS

QUADRAM EGA	$515
NEC MULTISYNC	549

PRINCETON		TAXAN		AMDEK	
MAX 12	$159	121 G or A	$139	300A	$139
HX 12	459	620	395	310A	145
HX 12E	515	630	450	600	410
SR 12	585	640	495	722	500

SOFTWARE

IBM DISPLAY WRITE III	$369
WORDSTAR 2000	249
WORDSTAR 2000+	279
WORD PERFECT 4.1	209
MICROSOFT WORD	269
VOLKSWRITER III	159
FREELANCE	219
CROSSTALK	109
WORD FINDER	49
SUPER CALC	189
LOTUS 1 2 3	329
SYMPHONY	429
D BASE II	299
D BASE III+	399
FRAMEWORK	399
FANCY FONTS	135
REVELATION	575
MULTIMATE	329
CLIPPER	349
R BASE 5000	339
ENABLE	349
MICROSOFT WINDOWS	79
EASY	89
FAST BACK	99
CHARTMASTER	239
PC OPTION BOARD	89

BORLAND — BORLAND — BORLAND

TURBO PASCAL	$43
TURBO LIGHTNING	69
REFLEX 1.1	99
TRAVELING SIDEKICK	59
GAMEWORKS	43
TURBO TOOL BOX	33

HARD DRIVES

SEAGATE 10 mb w/controller	$375
SEAGATE 20 mb w/controller	410
SEAGATE 30 mb w/controller	495
SEAGATE 30 mb for AT ST4038	595
SEAGATE 40 mb for AT ST4051	725
CORE INTERNATIONAL 20, 30, 40, 56, 72, mb	CALL
IOMEGA BERNOULLI	
10 mb w/card	1385
10 + 10 w/card	1995
20 + 20 w/card	2550
Bernoulli Plus	3895
MOUNTAIN 20 mb drive card	849
WESTERN DIGITAL 10 mb Hard Card	559
WESTERN DIGITAL HARD CARD 20 mb	625
PRIAM 60 mb AT	1195
PRIAM 43 mb AT	949

Prices Subject To Change

For Orders Call: 1-800-438-6039
For Shipping, Technical & In Georgia Call: 1-404-860-7364

Bulldog Computer Products

Incorporated as Georgia Micro

We accept VISA, MasterCard, American Express at no extra charge

Bulldog Rumbles Back To Low Prices!

GRAPHICS CARDS

GENOA EGA	$299
GENOA SPECTRUM	199
QUADRAM EGA	369
STB CHAUFFUER	249
STB EGA PLUS	299
SIGMA COLOR 400	449
SIGMA EGA	379
HERCULES GRAPHICS PLUS	199
ORCHID TURBO EGA	329

MULTI FUNCTION BOARDS

AST 6 PACK w/384K	$189
AST 6 PACK PREMIUM w/512K	375
RAMPAGE FOR AT w/512K	445
INTEL ABOVE BOARD for PC w/256K	375
INTEL PS for PC	350
INTEL ABOVE BOARD for AT w/512K	575
INTEL PS for AT	369
ADVANTAGE w/128K	349
IRMA BOARD	769
J RAM III by Tall Tree for PC w/o K	189
J RAM III by Tall Tree for AT w/o K	225
J LASER	250
ORCHID CONQUEST	279
AST 5251-11 PLUS	615
QUADBOARD w/o K	109

EVEREX SPECIALS

EGA	$249
GRAPHICS EDGE	239
THE EDGE	219
MAGIC CARD II w/384K	179
MINI MAGIC w/o K	69
300/1200 INTERNAL MODEM	165
60 m.b. TAPE BACKUP for AT Internal	799
External	849
RAM 3000 w/oK	175

Chips Chips Chips Chips Chips Chips Chips Chips
64K - $1.00 128K - $4.00 256K - $3.00 8087 - $149 80287 - $199

PRINTERS

EPSON

LX 80	$219
FX 85	349
FX 286	479
LQ 800	489
LQ 1000	689
RX 100	359
DX 10 Daisywheel	209
DX 20 Daisywheel	289
DX 35 Daisywheel	589
420 I	1395

OKIDATA

182	229
183	379
192	299
84 P	635
193	475
2410	1729
292	539
293	669

TOSHIBA

321	459
351	995
341 or 341E	709
351 Color	1199

HEWLETT PACKARD

Laser Jet	2375
Laser Jet Plus	3175

PRIMAGE 90

w/Pagemate III 90 CPS Daisywheel	1450

FUJITSU

DX 2100	359
DX 2200	469
DL 2400	769
DL 2400C	995

DRIVES & TAPES

360 KB Floppy for AT	$105
1.6 mb Floppy for AT	145
SYSGEN Quic 60 Internal	949
External	995
Genoa Galaxy 60 mb Internal	799
External	935
Galaxy 20 mb Internal	625
External	769

MODEMS

HAYES 1200	365
HAYES 1200 B comes w/Smart Com	335
HAYES 2400 External	565
HAYES 2400 Internal	515
US ROBOTIC COURIER 2400 or MICROLINK 2400	399
VENTEL HALF CARD	349
VENTEL 1200 PLUS	339

Sales Hot Line

1-800-438-6039

3241-E Washington Road • Martinez, Georgia 30907

You Can't Fumble With Bulldog!

Bulldog Computer Products

Incorporated as Georgia Micro

NEED A PRINTER?

SAVE WITH CONFIDENCE – CALL MIDWEST MICRO

NO TAX CHARGED TO RESIDENTS OUTSIDE OHIO
SAME DAY SHIPPING ON ALL ITEMS IN STOCK
TECHNICAL SUPPORT

PRICE GUARANTEE
We at MidWest Micro guarantee that we can save you up to 69% or more on your purchase of new fully warranteed equipment and supplies. And we will still give you friendly, courteous service. Call today and Save With Confidence!

ONE CALL SHOPPING TOLL FREE
DEALERS CALL 800-528-4504

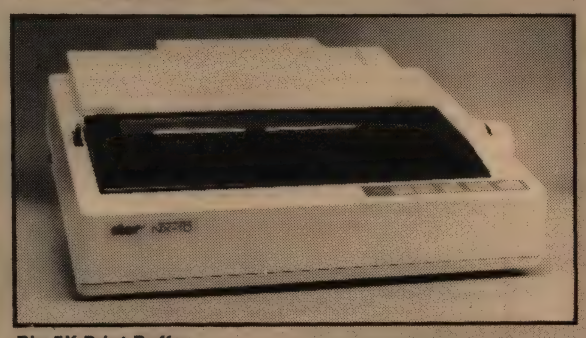
BEST DEALS — FULL SUPPORT — NEW NX AND NL MODELS

Get great hard copy and near letter quality with . . .

star NX-10

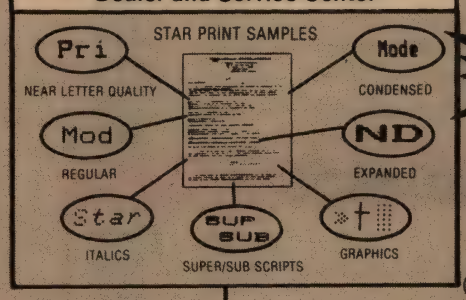
*Price Too Low To Advertise

LIST ~~$345~~



star micronics · inc

Buy from the nations largest Direct Authorized Star Micronics Dealer and Service Center



NEW

Fine Near-Letter-Quality, 100% compatibility and total reliability all in an easy-to-use printer!

star NL-10 PRINTER

From MidWest Micro

$345 Value

Full Featured NL-10 Printer

INTRODUCTORY SALE PRICE

JUST $229

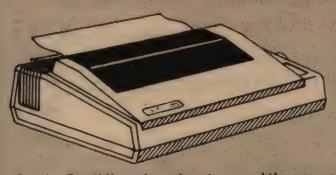
(HURRY – Limited Time Offer)

Big 5K Print Buffer

If you are looking for a top quality printer at an affordable price, you've found both in the new Star NX-10. The NX-10 operates bi-directionally at 120 CPS and includes many special features such as near letter quality printing, a huge 5K print buffer and easy access format switches for a wide range of character modes and character sets. You get friction feed for single sheets and tractor feed for fanfold paper. Another special feature is IBM graphics printer emulation.

All this makes the new NX-10 versatile enough for home or office. The NX-10 is easily interfaced with all popular computers such as IBM, Apple, Atari, Commodore, Sanyo and Zenith. Breakdowns are virtually unheard of with the NX-10. It is manufactured by a leading company with over thirty-five years of micro-precision experience for quality and reliability.

Whatever your personal computer...Star's NX-10 provides reliable and flexible performance meeting your needs today...and tomorrow.



star SG-15

ONLY $359

Get the Star Micronics advantage and the proven performance of the new super series. This 15 inch carriage model can handle your big report and spreadsheet needs. And word processing is a breeze with the built-in near letter quality print mode. The SG-15 even comes standard with an 8 page print buffer to save you more time than ever.

Full Featured NL-10 Printer

- **Quality Printing with Star Reliability**
- **Both Fine Near-Letter-Quality and High Speed Draft Printing**
- **Ease of Operation with Front Panel Switches**
- **Optional Interface Cartridges for Wide Compatibility**
- **Friction and Tractor Paper Feed Standard**

For quality, ease-of-operation and dependability, nothing beats the Star NL-10. You get outstanding print quality at 120 cps in draft mode and 30 cps in near-letter-quality. Plus, the sleek NL-10 offers full compatibility with most popular computers through plug-in interface cartridges. Interfacing was never easier. Just insert the appropriate plug-in interface cartridge for your IBM-PC, Commodore, Apple IIc or other parallel computer and your Star NL-10 is ready to print. Say good-bye to fumbling with dip switches. On the NL-10, you just touch a button on the control panel to set the print pitch (3 choices), to select the typeface and to print in either draft or NLQ mode. You can even set left and right margins, make top-of-form settings and control forward and reverse feed in the smallest pitch. Never before have so many features been so easy to use on a printer such as this. Single sheets are easily fed into your NL-10 printer simply by moving the paper release lever forward. For high-volume correspondence, you may choose to equip your NL-10 with an automatic cut sheet feeder (optional). On the Star NL-10, an adjustable tractor is standard. It provides smooth and reliable use of a wide variety of fanfold paper. The NL-10's micro-precision engineering delivers superior near-letter-quality printing at 30 cps and superb draft quality at 120 cps. Other standard features include the clean, long-life ribbon cassette and a nationwide service network. For quality and performance, the Star NL-10 is an unequalled investment.

NL-10 INTERFACES $59

star micronics · inc **SERVICE & REPAIR** ★★ SPECIAL ★★ Factory Authorized Service Center

Experience our. . . efficient factory authorized service at a special rate of just **$19.00 per hour.**
Discount prices on parts also.
DEALER SERVICE #OH38019

Complete star Line. . .

The star printer line includes a number of fast, efficient and cost effective models. Call MidWest Micro and let us help you select one today!

	List			List	
SD-10 (160 cps, 80 Col, NLQ Mode)	$499	*319	**SR-10** (200 cps, 80 Col, NLQ Mode)	$649	*469
SD-15 (160 cps, 132 Col, NLQ Mode)	599	*429	**SR-15** (200 Cps, 132 Col, NLQ Mode)	799	*599
			POWERTYPE DAISYWHEEL	499	*CALL

SAVE EVEN MORE!
Get a MidWest Printer Package – Add $49 To The Price Of Your Star Printer Selection.
PACKAGE INCLUDES:
1. A **Universal Printer Stand**
2. Attractive Heavy-Duty vinyl **Printer Cover**
3. Plenty Pack of 20# **Paper**
4. 2 Super length **Ribbon Reloads**
5. **Miniature Computer Clock**
6. Full **1 Year Warranty** parts and labor
7. Free use of MidWest Micro's Customer **Support Hot Line** (513-663-4992)

We Carry
CABLES & INTERFACES
for Commodore, IBM, Apple, TRS-80 and MOST OTHERS

Please send me a 20 page PREFERRED CUSTOMER CATALOG. I am enclosing $1.00 and understand that a coupon for $2.00 off my purchase is enclosed in this special catalog.
Name _____
Address _____
City _____ State _____ Zip _____

VISA MasterCard AMERICAN EXPRESS
For your protection we check thoroughly for stolen credit cards.

CALL TOLL FREE FOR INFORMATION OR ORDER
(800) 423-8215
IN OHIO CALL - (800) 321-7731 • DEALERS CALL - (800) 528-4504
OHIO DEALERS CALL (800) 222-6571
HOTLINE: 513-663-4992 (For Technical Assistance or Information on Your Order)

MONDAY-FRIDAY
9 AM - 6 PM (EST)
CLOSED SATURDAY
PRICES SUBJECT TO CHANGE
AVAILABILITY AND TYPE ERRORS

MidWest Micro-Peripherals

135 S. Springfield St., Saint Paris, Ohio 43072

MEMBER DIRECT MARKETING ASSOCIATION

All equipment shipped factory fresh with manufacturers warranty

HIGH TECHNOLOGY — NOT HIGH PRICES

EPSON PRINTER SALE

SAVE WITH CONFIDENCE – CALL MIDWEST MICRO

NO TAX CHARGED TO RESIDENTS OUTSIDE OHIO
SAME DAY SHIPPING ON ALL ITEMS IN STOCK
TECHNICAL SUPPORT

PRICE GUARANTEE
We at MidWest Micro guarantee that we can save you up to 69% or more on your purchase of new fully warranteed equipment and supplies. And we will still give you friendly, courteous service. Call today and Save With Confidence!

ONE CALL SHOPPING TOLL FREE
DEALERS CALL
800-528-4504

NEW! *Don't spend a fortune to own the world's most popular printer. . .*

LIST $349 **EPSON LX-80** *$Call$* ~~$229~~

The new Epson Spectrum LX-80 is perfect for the vast majority of your personal and professional printing needs, such as reports, term papers, recipe files or mailing lists.

It's easy to set up and operate. And, with Epson's convenient SelecType feature, you can choose from a wide range of typestyles and graphics. With convenient Dual Mode operation, the LX-80 lets you zip through drafts at high speed, or produce finished copies with a high-quality, typewriter-style appearance. And it accepts a complete line of options for easy, future expansion

Because the LX-80 is made by Epson—the standard of the industry— it's compatible with virtually every computer system made. It inherits a reputation for dependability and durability that's unsurpassed by any other brand. And it offers a full one year warranty—the best in the business.

The new Spectrum LX-80 offers a combination of performance and value at a price that's second to none.

ALL NEW UNBELIEVABLE SAVINGS

Epson continues to set the pace in computer printer performance with. . .

EPSON FX-85

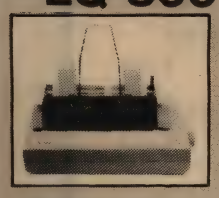
LIST $699

Quite simply the Epson FX-85 is the most intelligent way to print you can find. At a brisk 160 characters per second in draft mode and 32 characters per second typewriter style near letter quality mode, the FX-85 gives you professional versatility. A new 8K internal buffer stores up to 4 pages of data allowing you to print and use your computer at the same time.

Plus, for an added measure of creativity, Epson's exclusive SelecType feature gives you finger tip selection of numerous popular typestyles at the touch of a few buttons. Its easy control panel selector means less time programming when changing typestyles. The FX-85 is equipped with both pin feed and friction feed and connects to your computer by simply plugging in a cable. And with Epson's full year warranty you can be sure you're getting the most in quality, dependability and performance.

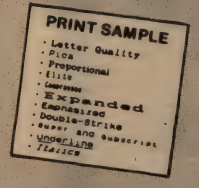
Get a hard working business printer designed to give you a powerful advantage in meeting the hectic, high-pressure demands of today's business world. . . get the FX-85!

LQ 800 & 1000



– 24 Pin – Letter Quality

$Call and Save$



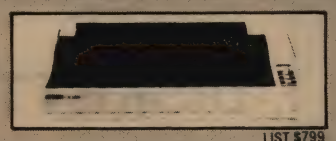
Best Prices And Support On Epson Printers In USA!

The LQ-800 and LQ-1000 can print at a speedy 180 cps printhead speed in the high speed draft mode. A speed fast enough to put a typical length business letter in your hands in under 25 seconds. Or, for a finished professional look, switch to Letter Quality mode at 60 cps. The results will amaze you. Epson's advanced new 24 pin printhead assures superb resolution page after page. In fact, print quality is so superior to that produced by other dot-matric printers, you'd think it came from a top of the line office typewriter. And for fast, efficient throughput, both print bi-directionally using intelligent, logic-seeking electronic systems. The smart way to put business on paper.

Whether you take one home, use it to help run a small to medium sized business, or use them in a corporate environment, the LQ-800 and LQ-1000 make excellent choices for virtually any printing task. You can turn out drafts at high speed, letter quality copy in seconds, or sharp, finely defined graphics. The 136 column LQ-1000 is ideal for printing spreadsheets and financial reports; while the 80 column LQ-800 can handle everything from correspondence to mailing labels. Both come with a 7K internal buffer that stores up to four pages of data allowing you to print and use your computer at the same time. Easily installed optional Identity Modules let you choose between Extended Epson Graphics, IBM Graphics Printer or Diablo 630 code. The kind of versatility a growing business demands. There are also built-in fonts and optional Font Modules for an array of easy to access font styles. The choice is yours.

NEW EPSON FX 286

$Call & Save$



LIST $799

The new FX-286 Dot-Matrix Printer is ideal for use at home, in the office or multi-use corporate environment. You can turn out drafts at high speed, Near Letter Quality copies in seconds and graphics of superb resolution. Standard Tractor Feed and Friction Feed accommodate virtually any type of paper; single sheet or fanfold. For optimum versatility, SelecType gives you numerous typestyles at the touch of a button. The FX-286 uses the industry standard parallel interface and has a dip switch selectable "dual identity;" Epson standard code compatibility and IBM® printer emulation. You even get build-in IBM graphics character sets for sharp resolution in graphs, charts and illustrations.

Optimum Versatility:
- Print drafts at high speed; Near Letter Quality copies; and superb graphics.
- An 8K internal buffer allows you to print and use your computer at the same time.
- Exclusive SelecType feature delivers numerous popular typestyles at the touch of a button.

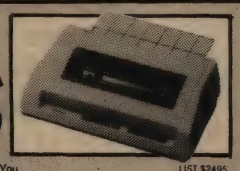
Please send me a 20 page PREFERRED CUSTOMER CATALOG. I am enclosing $1.00 and understand that a coupon for $2.00 off my purchase is enclosed in this special catalog.

Name _____
Address _____
City _____ State _____ Zip _____

DEALERS Call to improve your margins & delivery!

420 CPS EPSON *CR-420I Business Printer MOVES MOUNTAINS*

EPSON CR-420I JUST ~~$1095~~



LIST $2495

This stupendous brute of a printer will make short work of even your largest spreadsheets and reports. You will surprise yourself and amaze your friends and colleagues with this super printer performing in your office. Don't miss out on this one!

SPECIFICATIONS

Carriage Width: 132 Columns (at 10 pitch)
Print Method: Impact dot matrix, bidirectional, logic seeking in both text and graphics
Print Speed: 420 CPS/Draft, 104 CPS/Correspondence Quality, 2500 dots/sec – standard graphics, 1250 dots/sec – high density graphics
Print Head: 8-pin, staggered arrangement
Character Sets: Standard 96 ASCII printing in 17 fonts
Line Spacing: n/180 in (n=0-255)
Paper Feed: Pin feed (paper width adjustable) and built-in friction feed
Paper Width: 5" to 15" (pin feed), Up to 16" (feed)
Paper Path: Rear and bottom entry

CR 420I Ribbon Cartridges $16.95

NEW! EPSON DX SERIES DAISYWHEEL SPECIALS

We understand you have some questions. . . And YES *we have some answers. . .*

Productivity is very important to us. How fast are the DX-10, CX-20 and DX-35?
The choice is yours. At 10 cps, the DX-10 can turn out a typical business letter about three times faster than even the most nimble typist. Which equates to over 100 words per minute. Move up to the DX-20 and you get the same impeccably printed page, at twice the speed. Its quick 20 cps means overall efficiency at the top of the class in daisywheel printers. At over 200 words per minute. The DX-35 gives you impeccable quality and performance at the top of the daisywheel class at 35 cps and as an added feature provides a 136 column carriage.

How versatile are the DX Series Daisywheel Printers?
All are ideal additions to any office or home computer system. And in business environments, versatility is often the key to greater success. Each has a Single Sheet Feed for printing letters and spreadsheets. With the DX-20, paper sizes up to 13 inches in width are accommodated. Plus, for the utmost in creative versatility, an interchangeable Diablo compatible print wheel gives you immediate access to a huge selection of English and international typestyles.

Will any Epson Daisywheel Printer work with the computer we now have?
Absolutely. Not only is Epson the world leader in computer printers, it's the world standard. Virtually all computer manufacturers and software publishers design their products to be specifically compatible with Epson printers.

How long is the Epson warranty?
One full year. Because Epson DX Daisywheel Printers are made by the world leader in computer printers, you can be sure you're getting the most in quality, dependability, and performance.

Will the DX-10, DX-20 and DX-35 be able to grow with our business?
The option is yours. An optional Tractor Feed for long printing jobs, a Cut Sheet Feeder for aligning and inserting individual sheets, and for the DX-20 and DX-35, a typewriter keyboard. There's simply no question about it. When you want to look good on paper, you can't beat the Epson DX Series Letter Quality Daisywheel Printers.

Prices as Low as $198

Call Now and SAVE

***Special Note** We strive to offer the best inventory possible on hard to find EPSON products. This may cause some variations in price. We strive to give you the very best combination of price, availability and support. Your cooperation and understanding are greatly appreciated and your satisfaction is very important to us.

VISA MasterCard AMERICAN EXPRESS

For your protection we check thoroughly for stolen credit cards.

CALL TOLL FREE FOR INFORMATION OR ORDER
(800) 423-8215
IN OHIO CALL - (800) 321-7731 • DEALERS CALL - (800) 528-4504
OHIO DEALERS CALL (800) 222-6571
HOTLINE: 513-663-4992 (For Technical Assistance or Information on Your Order)

MONDAY-FRIDAY
9 AM - 6 PM (EST)
CLOSED SATURDAY
PRICES SUBJECT TO CHANGE
AVAILABILITY AND TYPE ERRORS

MidWest Micro-Peripherals

135 S. Springfield St., Saint Paris, Ohio 43072

MEMBER DIRECT MARKETING ASSOCIATION

All equipment shipped factory fresh with manufacturers warranty

HIGH TECHNOLOGY — NOT HIGH PRICES

APPLE COMPATIBLE DISK DRIVES:

Full Height $119
Cased, cabled color co-ordinated to the Apple & ready to plug in

Apple IIc Compatible $115
We cannot say enough about this drive. It is 100% compatible and the warranty cannot be beaten.

1/2 Height Apple Compatible . . . $109
1/2 Height also 100% Apple compatible

MACINTOSH DRIVE

External400K $149
External 800K $239

DISKETTES

DS/DD Box of 10 . . . . . $10.95
SS/DD Box of 10 $8.95

*Full Lifetime Warranty Includes Hubrings and Labels 100% Certified

16K RAM Chips . . . . . 50¢ each
64K RAM Chips . . . . . 9 for $9.00
128K RAM Chips . . . . . $5 each
256K RAM Chips . . . . . $2.75 each
Infrared Remote Keyboard for IBM $105
Cooling Fan For Apple $29
8087-3 . . . . . CALL
8087-2 . . . . . CALL
80287 . . . . . CALL
NEC V-20 . . . . . $16
Plug In Strips w/Surge Protection. $11.50
IBM Printer Cable 6 Ft. $15
Shielded & Grounded
Apple Compatible Joysticks (II,II+) . $15
While they last, Verticle & Horizontal Control
Apple Compatible Joysticks (IIc,IIe) . . $25

IBM COMPATIBLE DRIVES

TEAC 55BV $99
90 Day replacement warranty double sided double density

TEAC 55F $129

FUJITSU $89
1/2 Height DSDD

TM 50-2 . . . . . $89
1/2 Height DSDD

STOP
AND COMPARE OUR PRICES

APPLE TYPE CARDS

Disk Controller Cards $39
Parallel Interface Cards $39
16K RAM Cards $34.95
Super Serial Card $69
IIe Type Extended 80 Column Card w/64K. $49
10 MEG HARD DRIVE $369
For IBM with Controller
20 MEG HARD DRIVE $429
For IBM with Controller

AST 6 PACK + ... $169

1200 Baud External Modem. $109

XT TURBO $429
FCC Approved w/640 K, AT Style Keyboard

We Ship Daily • 90 Day Replacement Warranty
DEALER Inquiries Welcome • Minimum $2 Shipping Charge

GUENTHER
COMPUTER PRODUCTS INC.

763 Chestnut
Unit B
Santa Cruz, CA 95060

(408) 458-9404

Please Include
3% Shipping Charge

SAVE AT WHOLESALE!!

XT SYSTEM 2-BASIC

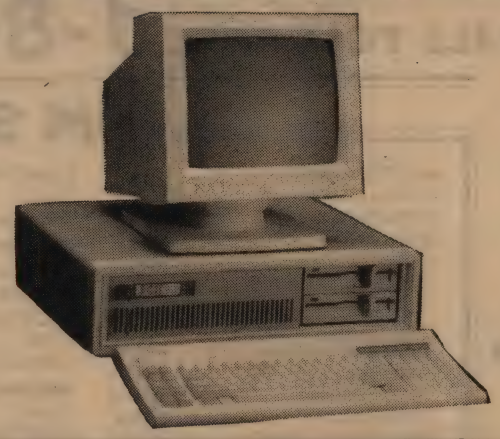
FCC approved

Includes:
• Flip-top XT-type case • 150-watt power supply • 640K motherboard with 256K on board

No. 98888
YOUR COST **$263**

—SUGGESTED ADD-ONS—

- Monochrome graphic printer No. 99010 ..... $75
- (2) Qume floppy drives No. 93140 ..... $190
- Magnavox Monitor No. 96710 ..... $87
- Floppy drive controller No. 92260 ..... $29
- K-150L keyboard No. 90130 ..... $45
- **Total - System 2 plus Add Ons** $689



XT SYSTEM 3-BASIC TURBO

FCC approved

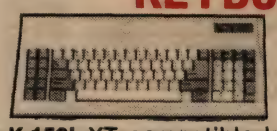
Includes:
• Flip-top XT-type case • 150-watt power supply • 640K turbo motherboard with 256K on board

No. 98999
YOUR COST **$293**

—SUGGESTED ADD-ONS—

- Monochrome graphic printer No. 99010 ..... $75
- (2) Qume floppy drives No. 93140 ..... $190
- Magnavox Monitor No. 96710 ..... $87
- Floppy drive controller No. 92260 ..... $29
- K-150L keyboard No. 90130 ..... $45
- **Total - System 3 plus Add Ons** $719

KEYBOARDS



IBM® compatible
FCC approved

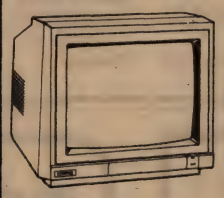
K-150L-XT compatible keyboard with lighted num lock & cap lock.
No. 90130 ..... **$45**

K-150M-AT-look-alike keyboard made exclusively for XT's with enlarged return key, cap lock & num lock.
No. 99020 ..... **$59**

K-134-Separate numerical & cursor pads/function keys along top, LED cap lock & num lock. 5151 Keytronic-type.
No. 51515 ..... **$76**

MAGNAVOX PROFESSIONAL MONITORS

FCC Approved



Monochrome TTL

• Built-in tilt stand • High resolution (1000 lines) • 12" non-glare screen • 25 lines x 80 column • 2 year warranty

No. 96710 - green **$87**
No. 96720 - amber ... **$97**

RGB Composite Color

• RGB, TTL, RGB analog & composite video inputs • 25 lines x 80 column • 13" non-glare screen • 640 dots x 240 lines of resolution • 2 year warranty
No. 97890 ..... **$298**

ACCESSORIES

Software **$65**
• ITT, MS-DOS & GW, Basic No. 97580
• Call for our Flyer on IBM - compatible software, including packages for REAL ESTATE Application

Name Brand Floppy Disks - 10 paks
• Double density • Certified 100% error free • Lifetime warranty • from Sony, Fuji, & more!
No. 98910 single sided ... **$9.90** 98920 double sided ... **$12.90**

Power Outlet Strip **$9.95**
• 6 outlets • 15 amp surge protector • 6 ft cord No. 90140

Swivel Base Monitor Stand
• Rotates 360 degrees • Tilts up/down 125 degrees
12" No. 89980 ..... **$9.90** 14" No. 89990 ..... **$12.90**

Computer Platform **$33.00**
• Oak construction • slide-out drawer No. 90190

Diskette File **$8.50**
• Stores 100 diskettes No. 90060

Anti-Glare Screens
• For Monochrome Monitor
12" No. 90210 ..... **$12.95** 14" No. 99030 ..... **$15.95**
• For Color Monitor
12" No. 90220 ..... **$16.95** 14" No. 99040 ..... **$17.95**

ADD-ON BOARDS

FCC approved • IBM® compatible

Multifunction Board
• 384K expandable • Serial & Game ports • Parallel printer port • Clock calendar w/battery backup • Manuals & cables
No. 92290 ..... $75

Floppy Disk Controller
• drives 2 internal drives • Includes cable
No. 92260 ..... $29

Game I/O Board
• 2 ports
No. 92850 ..... $21

Parallel Printer Card
No. 92700 ..... $21

Multi I/O Card
•Built-in floppy controller that can drive 2 floppy drives • TWO RS 232 serial adapters • Calendar clock • Parallel printer port • Joystick adapter
No. 96770 ..... $79

Hard Drive Controller Board
• Controls 2 hard drives from 5 mb to 32 mb
No. 96230 ..... $110

Monochrome Graphic Printer Board
• Built-in Parallel printer port • Text 25 line x 80 column, 720 x 348 resolution • TTL high resolution output
No. 99010 ..... $75
No. 96360 text only $54

640K RAM Expansion Board
No. 99630 ..... $44

RS 232 Serial Port Board
No. 92310 ..... $27

Clock Card
• Built-in calendar • Real time clock
No. 96350 ..... $29

Color Graphics Board
• RGB & composite port • Light pen interface • Graphics 320 x 200 (color) 640 x 200 (B/W) • Text 25 x 80
No. 92280 ..... $65
No. 96670 RGB & printer port only $73

MODEMS

FCC approved

SmarTeam
• Hayes compatible • 300/1200 BAUD • Auto answer/redial • LED lights
No. 91990 ..... $159

Avatex Modem
• Auto answer, dial, & redial • PC talk III software included • Automatic self-test on power up
No. 97070 ..... $87

Easy Data Modem
• Auto answer, dial, & redial • Hayes compatible • 300/1200 BAUD
Why pay more for units with the same features?
No. 97905 ..... $119

Webcor Modem
• 300 BAUD • Bell 103 compatible • Duplex operation • Selectable originate/answer modes • AC adapter included
No. 91995 ..... $21

PRINTERS

Seikosha SP-1000
• IBM® compatible
• 100-CPS with 20-CPS NLQ
No. 99531 . **$198**

Panasonic KX-P1080
• 100-CPS with 20-CPS NLQ
• 10" width paper capacity
No. 99540 ..... **$188**

Canon A-40
• 140 CPS with 27-CPS NLQ
• 3 kinds of graphic printing
No. 99550 ..... **$239**

DISK DRIVES

Micro Science
• 10 meg hard disk drive
No. 99890 ..... **$238**

Seagate
• 20 meg hard disk drive
No. 96830 ..... **$378**

Direct Drive/Floppy Drive
• 360 KB 40 track direct drive
• from Panasonic, Teac, & more!
No. 96840 ..... **$105**

CABLES & SWITCHES

RS 232 Serial Cable
• DB 25 pin, female-to-female
6 ft. No. 90270 ..... $6.99
• DB 25 pin, male-to-male
6 ft. No. 90240 ..... $8.99
• DB 25 pin, male-to-female
6 ft. No. 90280 ..... $6.99
10 ft. No. 96150 ..... CALL

Computer to Printer Centronics
• 36 pin, Centronics male-to-male
6 ft. No. 90260 ..... $7.99
10 ft. No. 96160 ..... CALL

Computer to Peripheral Centronics Cable
• 36 pin, Centronics male-to-female
6 ft. No. 98525 ..... $7.99
10 ft. No. 96130 ..... CALL

Gender Changers
• DB 25 pin, female each end
No. 90070 ..... $4.80
• DB 25 pin, male each end
No. 90080 ..... $4.80

Computer to Modem Cable
•DB 25 pin, male-to-female, pins 1-8, 12, 20, 22 wired.
6 ft. No. 90250 ..... $4.99
10 ft. No. 96140 ..... CALL

IBM® Computer to Printer Cable
• DB 25 pin, male-to-36 pin centronics male
6 ft No. 90230 ..... $5.99
10 ft. No. 96110 ..... CALL
15 ft. No. 90233 ..... CALL
25 ft. No. 90236 ..... CALL

Data A/B Switches
• Serial A/B switch
Select 1 printer from 2 computers
No. 90160 ..... $27.00
• Parallel A/B switch
Select 2 printers from 1 computer
No. 90170 ..... $29.00

OVER 8 YEARS AS A LEADING MAIL ORDER WHOLESALER!

THE WHOLESALE OUTLET

1 INTERSTATE AVENUE, DEPT. CS, ALBANY, NEW YORK 12205

CALL **518-459-7883** FOR CATALOG WITH HUNDREDS OF ITEMS. ALL ORDERS SHIPPED FOB ALBANY. CUSTOMER PAYS FREIGHT AND HANDLING. ORDERS SHIPPED UPS COD (MONEY ORDERS OR CASHIER'S CHECK ONLY) MINIMUM ORDER $25. (PRICE'S SUBJECT TO CHANGE WITHOUT NOTICE. WE ARE NOT RESPONSIBLE FOR TYPOGRAPHICAL ERRORS) SOME ITEMS ARE NOT AS PICTURED.

IBM® PC XT AT ARE REGISTERED TRADEMARKS OF INTERNATIONAL BUSINESS MACHINES, INC.

MasterCard VISA

tcp COMPUTER

ORDERS ONLY
CALL TOLL FREE **1-800-468-9044**

FOR YOUR MACINTOSH:

HARD DRIVES:

PARADISE
MAC 10 ..... $CALL
MAC 20 ..... $CALL

PCPC MACBOTTOM 20
HARD DRIVE ..... $CALL

3½" DISKS
SONY(10)SS/DD $19.95
MAXELL(10)SS/DD .. $18.95
FUJI(10)SS/DD $18.95
Call for price on DS/DD

SOFTWARE:

MICROSOFT
EXCEL $219.00
MULTIPLAN $105.00
FILE $109.00
WORD $109.00
CHART $72.00

IBM SOFTWARE

ASHTON-TATE
D Base III Plus ..... $CALL
FrameWork II ..... $CALL

BORLAND
Reflex ..... $CALL
Sidekick(unprotected)..... $47.00
Super Key ..... $CALL
Turbo Database Toolbox ..... $CALL
Turbo Game Works $39.00
Turbo Graphix Toolbox $31.00
Turbo Lightning $54.95
Turbo Pascal ..... $CALL
Turbo Pascal w/8087. ..... $59.00

CENTRAL POINT
Copy II PC $27.00
PC Tools $27.00

COSMOS
Revelation $459.00

LOTUS
123 ..... $309.00

LIVING VIDEOTEXT
Ready $52.95
Think Tank $97.95

MICROPRO
Wordstar 2000..... $CALL
Wordstar 2000+ ..... $CALL

MICRORIM
Clout $124.00
R Base 5000 ..... $329.00

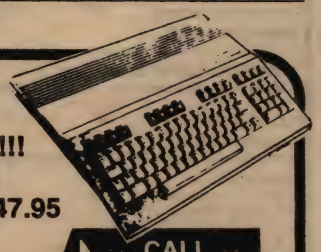
MICROSOFT
Chart $164.00
Flight Simulator..... $32.95
Project $227.00
Windows $62.00
Word ..... $CALL

MICROSTUF
Crosstalk XVI ..... $CALL
Crosstalk VI ..... $CALL
Remote ..... $CALL

MULTIMATE
Multimate $207.00
Multimate Advantage $269.00

PAPERBACK SOFTWARE
VP Planner..... $52.95
Executive Writer..... $39.95
Executive Filer..... $29.95
Paperback Writer..... $25.95
Paperback Speller..... $25.95

SOFTWARE PUBLISHING
Harvard Total PM..... $257.00
Harvard
Presentation Graphics..... $229.00
PFS Access ..... $CALL
PFS File $79.95
PFS Report $69.95
PFS Plan $79.95
PFS Graph $79.95
PFS Write ..... $CALL



COMMODORE 128

ON SALE NOW!!!
1670 ....$147.95
MPS-1000 ...$247.95

C128
1571, 1572 DRIVES
1902 MONITOR
1350 MOUSE
1700, 1750 RAM EXPANSION

CALL NOW FOR LOWEST PRICES

SAVE A BUNDLE ON A BUNDLE
PACKAGE DEALS AVAILABLE
CALL FOR DETAILS

COMMODORE 128 SOFTWARE
EPYX Multiplan 128.....$CALL
VIZAWRITE 128 .....$CALL
WORDPRO 128 ..... $49.95
CMS 128 Accounting*.. $134.95
* Includes General Ledger, A/P, A/R, Payroll modules

AST CARDS
Rampage PC..... $339.00
Rampage AT..... $459.00
Six Pack Plus..... $CALL
I/O Plus II..... $CALL
Advantage AT..... $129.00
5251/11..... $595.00
5251/11 Plus..... $625.00
5251/12..... $555.00

STB CARDS
EGA +..... $319.00
Chauffeur..... $229.00
Color XVI..... $159.00
Graphix Plus II..... $219.00
Mono Plus..... $139.00
Super Res 400..... $289.00
Mem Companion w/0 k.... $199.00
Rio Grande w/0k..... $259.00
Rio Plus II..... $CALL
Super I/O II..... $119.00
Printer Plus..... $64.00
Serial Plus..... $74.00

NOW AVAILABLE

HARD DRIVES
FOR PC & XT OR COMPATIBLES
Include controller card, and connecting cables
20 Meg Seagate 225 w/
Western Digital controller. $409.00
30 Meg Seagate w/
adeptec controller..... $CALL

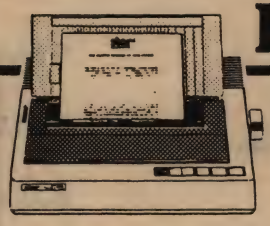
HARD CARDS
Hard Drives that fit in an expansion slot
Gold Card 20 Mb..... $539.00
Maynard On Board 20..... $CALL

CHIPS
Memory
256K 150 ns Rams..... **$CALL**
.....Qty 50+ **$CALL**

64k Ram..... $CALL

Numeric Coprocessors
8087 ..... $117.00
8087-2..... $152.95
80287..... $CALL

PRINTERS PRINTERS PRINTERS

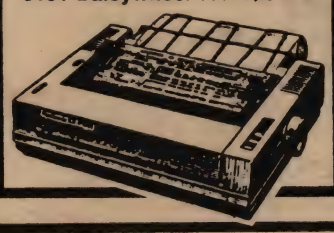


star micronics·inc

A NEW STAR IS BORN!!

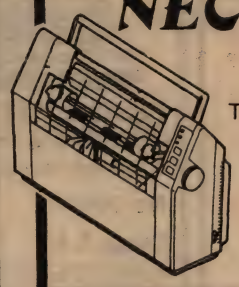
NX-10 CALL FOR PRICE & DETAILS
SG-10 .....$CALL
SG-15 .....$364.00
SD-10 .....$323.95
POWERTYPE $299.00
18 cps daisywheel
SD-15, SR-10
SR-15 .....$CALL

PANASONIC
1091 ...$229.00
1080 ...$199.00
1092.....$CALL
1592.....$CALL
3131 Daisywheel .....$CALL
3151 Daisywheel .....$CALL



PRINTER LIQUIDATION

NEC 8027A



105 CPS, Friction & Tractor Feed
$139

LX-80 ..... $229
LX-80 tractor feed **$34.95**
Homewriter 10 ... $CALL
includes Commodore or Atari interface
DX-10 ..... $239
10 CPS daisywheel
DX-20 ..... $CALL
20 CPS daisywheel
JX-80, LQ-1000, LQ-800
SQ 2000.....$CALL
FX-85 ..... $CALL
FX-286 .....$CALL
HS80 ..... $329

tcp TUSSEY COMPUTER PRODUCTS
P.O. BOX 1006
STATE COLLEGE, PA 16804

CLASSIFIEDS

INFORMATION AND PA ORDERS 814-234-2236

OPEN 9-8 Mon-Fri; 10-5 Sat EAST COAST TIME

MODEMS

US Robotics

Password 1200.....$229.00
Courier 2400.....$419.00
Microlink 2400 internal. $419.00

intel Above Board

Above Board w/64k, upgradeable to 512k.... $249.00
Above Board w/256k, upgradeable to 2Mb.....$309.00
Above Board w/2Mb..... $529.00
Above Board PS.....$CALL

Okidata

182..... $214.00
192..... $344.00
193..... $519.00
2410..... $CALL

CORPORATE AND EDUCATIONAL PURCHASES

We offer a full line of services catering to you.

Including:
- **Special prices on quantity purchases**
- **Your own account representative**

We accept purchase orders and offer terms to qualified organzations.

Please call us for quotes on all your computer, peripheral, and supplies requirements

MONITORS

Goldstar
2233 12" Amber composite. $79.95
2233 12" Green composite. $79.95
2003 Hi-Res Amber.....$99.95

SEE ZENITH BOX FOR ZENITH MONITORS

AMDEK
300 G..... $119.00
300 A..... $134.00
310A..... $157.00
COLOR 600 ..... $409.00
Color 722 ..... $489.00

SAKATA SC-100.....$149.00

DISKS per box of 10

5 1/4" BONUS DISKS
SS/DD $7.45
DS/DD $7.95
5 1/4" NASHUA
SS/DD $8.95
DS/DD $9.45
5 1/4" VERBATIM
SS/DD $8.95
DS/DD $9.95
5 1/4" TUSSEY DISKS
(LIFETIME WARRANTY)
SS/DD $8.45
DS/DD $8.95
3 1/2" SONY
SS/DD $17.95
DS/DD $26.95
3 1/2" FUJI
SS/DD $15.95
DS/DD $23.95
3 1/2" MAXELL
SS/DD $16.95
DS/DD $24.95
Buy 10 boxes deduct $.50/box
Buy 25 boxes deduct $1.00/box

ZENITH

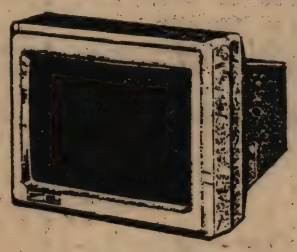
Chosen by the IRS!!

171 Portable
Includes 2 drives, 256k memory, MS-DOS,can hook to external monitor.....$1595.00

158
XT compatible with 8 slots, 256k, CGA standard upgradeable to 640k on motherboard
158-41 single drive..... $1369.00
158-42 double drive..... $1495.00
158-43 1 drive and 20 Meg Int. hard disk..... $CALL

148 use
PC compatible as low as ..$949.00
Call for pricing and configuration

1 YEAR WARRANTY ON ALL ZENITH PCs



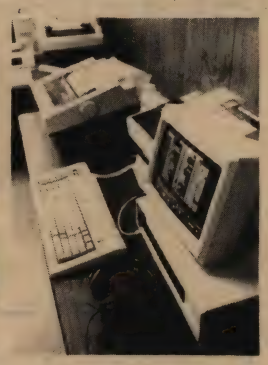
ZENITH MONITORS

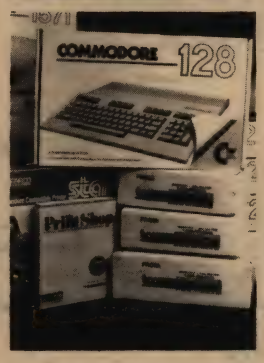
1220 12" Amber..... $94.00
1230 12" Green..... $94.00
1240 12" TTL Composite.$144.00
1330 RGB.....$429.00
1360 Hi res color..... $CALL
1380 RG comp..... $CALL

Software orders over $50.00 will be shipped FEDERAL EXPRESS (yes, even with *these* prices)
You only pay TCP's standard shipping charge of $4.00 per order. This offer also valid on peripherals and accessories under 8 pounds. Orders arriving before 11:00 AM our time will be shipped out same day.*

FEDERAL EXPRESS

Computerized order entry, processing and status allow TCP to serve you faster and better!





- If through some oversight we don't have the lowest price, we would appreciate the opportunity to beat it. If we can, you will get the benefit of our Federal Express shipping on software orders over $50.00.
- We accept Mastercard, Visa, COD and mail orders.
- Purchase orders are accepted from qualified corporations and institutions. Minimum order of $500.00 required.
- No sales tax on orders outside of PA.
- Buy with confidence. We honor manufacturers warranty.

To order by mail: We accept money order, certified check, personal check. Allow 2 weeks for personal check to clear.
Shipping: $4.00 for software and accessories/ $10.00 for printers and color monitors/ $8.00 for disk drives and other monitors/ Add $3.00 per box shipped COD. Call for other shipping charges. Additional shipping required on APO, FPO, AK, HI, and foreign orders.
Terms: ALL PRICES REFLECT CASH DISCOUNT, ADD 1.9% FOR MASTERCARD OR VISA. Manufacturer's warranty honored with copy of our invoice. **ALL SALES ARE FINAL.** Defective items replaced or repaired at our discretion. Pennsylvania residents add 6% sales tax. Prices and terms subject to change without notice.

WHEN IN STATE COLLEGE VISIT OUR RETAIL STORE

THE LOGICAL LINK COMPUTER STORE

300 S. Pugh Street prices may be higher at retail store

ORDERS ONLY...CALL TOLL FREE **1-800-468-9044** **tcp**

SPECIALIZING IN EVERYTHING FOR YOUR PC NEEDS AT DISCOUNT PRICES

Mother Boards

0 - 640K + Bios . $ 83.00
8 MHz Turbo ..... $ 155.00

Vidio Cards

MonoChrome ..... $ 39.50
MonoGraphics .... $ 72.00
ColorGraphics ... $ 62.00
Graphix + ... $ 139.00
The Edge ..... $ 189.00
EGA (IBM) ..... $ 239.00
Taxan 555 ..... $ 165.00

I/O Cards

I/O + II ..... $ 69.00
Disk I/O ..... $ 89.00
Printer only .... $ 32.00

RAM Cards

0 - 576K ..... $ 49.00
0 - 384K MultiFunc. $ 89.00
0 - 2 Mb ..... $ 169.00

Cases

XT Slide ..... $ 39.00
XT Flip top ..... $ 42.00
AT Style for XT . $ 87.00
Portable Compaq
style ..... $ 399.00

Monitors

Fortronics (Comp. Green) .. $ 69.00
MTR TTL (IBM Lookalike) ... $ 135.00
Color Monitor (Mitsubishi) $ 299.00
Taxan EGA (600 x 350) ..... Call

8087 ..... $ 129.00/Each
256K ..... $ 32.00/Bank
64K ..... $ 12.00/Bank
128K ..... $ 4.00/Each
v20 ..... $ 14.00/Each

Floppy Drives

Fujitsu DSDD 5 1/4" ... $ 79.00
Teac 55B ..... $ 97.00

Power Supplies

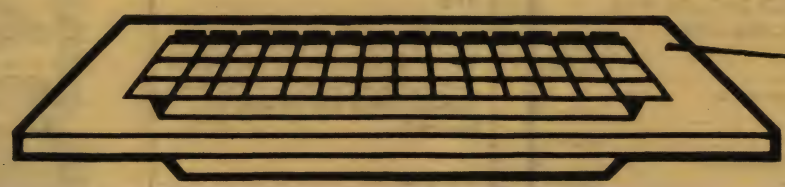
135 W ..... $ 59.00
150 W ..... $ 72.00
UPS 200W 1/2 Hr . $ 299.00

Tape Backup

10 Mb Irwin ..... $ 389.00
45 Mb Tandberg .. $ 499.00

Hard Disks

Controllers
2 Unit autoboot . $ 86.00
RLL Adaptek 2070 $ 145.00
Cable set ..... $ 6.00
10 Mb ..... $ 199.00
ST225 (20Mb) .... $ 285.00
30 Mb Kit ..... $ 485.00



Keyboards

5150 ..... $ 42.00
AT Stlye ..... $ 69.00
5151 ..... $ 82.00

Apple II+/e

IIe MotherBoards Rev A $ 299.00
II+ MotherBoards ..... $ 175.00
80 Col Card ..... $ 39.00
IIe Premium SoftCard .. $ 125.00
IIe RGB Cards ..... $ 99.00
Keyboards ..... $ 75.00
Parallel Port ..... $ 45.00
Power Supplies ..... $ 69.00
Hal/MMU/IOU/CD/EF ..... in stock

Macintosh
(Memory upgrades)
We ship you an upgraded board. You return the old one to us. Easy ...

128K to 512K ..... $ 169.00
128K to 2Mb ..... $ 535.00
512K to 2Mb ..... $ 496.00
Mac+ to 2Mb ..... $ 489.00

Keyboard/Mouse/Roms/PS .. in stock

Apple III

128 to 256K upgrade Kit . $ 185.00
256K Motherboards ..... $ 349.00
128K Motherboards ..... $ 165.00
Powersupplies ..... $ 85.00
Z80 SoftCard + C/PM ..... $ 39.00

TANDY 1000

20 Mb Hard Disk Kit $ 425.00
0 - 512K Ram Card . $ 65.00
MultiFunction 0-512 $ 169.00
Serial Port ..... $ 49.00

AT PARTS

1.2 Mb Floppy Drive . $ 129.00
360 K Floppy Drive .. $ 79.00
80287 ..... $ 199.00
NEC 80286 replacement $ 65.00

Case ..... $ 79.50
200W PowerSupply .... $ 109.00
keyBoard ..... $ 57.50
AT Motherboard + Bios $ 549.00

0 - 1.5 Mb MultiFunc. $ 199.00
Hard/Floppy Disk Cont $ 199.00
I/O Parallel/2 Serial $ 85.00
AST Advantage + 128K $ 265.00

NDRC
8511 Manderville,
Dallas, Texas 75231

All prices quoted FOB Dallas. Add 3% for VISA & M/C. Add 5% for AMEX. Prices subject to change. Packing $3.50/order.

We ship nationwide.

NDRC

...the business computer people

214-750-9889

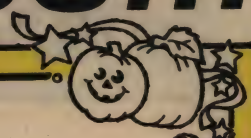
ENQUIRY FORM
8511 Manderville
Dallas, Texas 75231

Please send me more information on:

- ☐ 1. IBM & Compatible Parts
- ☐ 2. Apple II+/e Parts
- ☐ 3. Macintosh Parts & Upgrades
- ☐ 4. Shrinkwrap machine ☐ 5. Networking PC's
- ☐ 6. Mainframe emulation
- ☐ 7. Public Domain Software MS-DOS
- ☐ 8. Public Domain Software Apple

Name _____
Street: _____
City: _____ State: ____ Zip: _____
Daytime Tel: (_____) _____-_____

TAKE A BYTE OUT OF US...



PLAIN JANE

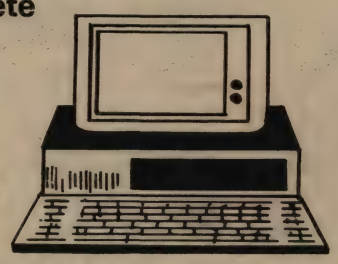
640k motherboard, 256k installed, Case, Power supply 135W, Hardware, manual **$265.00**

PC/XT-30 Complete

30 Mb of Hard Disk storage, Disk drive, 256k installed on 640k motherboard, AT style Keyboard, Parallel and RGB ports, Case, and Monochrome Monitor with graphics ..... ~~$1269.00~~ $1169.00

2 Disk Drive Complete

Two ½ Ht Disk Drives, 256k installed on 640k motherboard, IBM style case, 135W Power supply, 5150 Keyboard, Monochrome Monitor with graphics and RGB port included. .. ~~$749.00~~ $669.00



SPOOKY SPECIAL #1

EXPANSION BOX—Ideal for the senior executive. This unit is designed to work with the Compaq Portable II®. The Transporter Card fits into the Compaq auxiliary slot. This Expansion Unit comes with a built-in 135W power supply. Will handle the Intell® Above Board 20 Mb hard card and mainframe emulator. And—with a mainframe emulation card enables the user to have access to the company mainframe without the permanent tether.

SPOOKY SPECIAL PRICE **$299.99**

Offer good October 1 through 31, 1986.

8" DRIVE

8" Hard Drive by Quantum model Q2040 ..... **$599.00**

All machines are Bench Tested for 12 Hrs to ensure that your machine runs trouble free.

EXOTICS

AST5251	$ 399.00
Irmalette	$ 499.00
Irmaline	$ 680.00
Orchid Blossom 384K	$ 285.00
ABS PC/Mini	$ 799.00
SR400	$ 375.00
Persyst BoB	$ 325.00
IBM EGA	$ 225.00
Sigma 400L	$ 305.00
Titian Accelerator	$ 399.00
Photon 800x800 Vidio	$ 795.00
Logimouse	$ 95.00
Plotter 11"x17"	$ 795.00

(214) 750-9888

Phones Answered 24 hrs.

SPOOKY SPECIAL #2

Microsoft MS-DOS 3.2 ..... **$95.00**

All prices are quoted FOB Dallas. Add 3% for Visa and M/C. Add 5% for AMEX. Prices subject to change. Packing $3.50/order.

IBM/Apple Disk Drive Alignment System

The DDAS allows you to easily set the alignment of Floppy Disk Drives (5¼") double, single or quad quickly, accurately and without a scope. Prior technical experience not needed.

1	2-5	Dealer (6+)
$124.00	$119.00	Call

NDRC (214) 750-9889

We ship nationwide.

RECONDITIONED COMPUTERS

ITT 10Mb	(Dos)	$1,149.00
Eagle PC 10 Mb	(Dos)	$ 950.00
Eagle PC 2DD	(Dos)	$ 599.00
Sperry PC 2DD 8MHz	(Dos)	$1,049.00
Kaypro 2000 Laptop	(Dos)	$ 999.00
Epson HX-12 Laptop	(CPM)	$ 499.00
Epson QX-10 2DD	(CPM)	$ 599.00
IBM Portable 2DD	(Dos)	$ 980.00
IBM 2DD	(Dos)	$ 799.00
Compaq Portable		Call
AT&T 6300		Call
Televidio TS1603	(CPM)	$ 600.00
Apple IIe (CPU)		$ 515.00
Apple II+ (CPU)		$ 275.00
Apple IIc		$ 575.00
Apple III (128K)		$ 499.00
Macintosh		Call

SOFTWARE MS-PC/DOS

DAC Accounting	$ 62.94
DAC Payroll	$ 44.00
Copy II PC	$ 29.00
TurboPascal	$ 47.00
Personal Accounting	$ 99.95
IBM DOS 3.1	$ 85.00
IBM DOS 3.2	$ 95.00
IBM Technical Ref for DOS 2.1	$ 39.00
Cobol 1.1	$125.00
Fortran	$ 95.00
Xenix (IBM Basic operations + Shell)	$350.00
DBASE III	$389.00

RECONDITIONED PRINTERS

LQ 1500 (Epsom)	$ 749.00
IBM Quietwriter	$ 855.00
Diablo 630	$ 599.00
FX 100 (Epsom)	$ 385.00
Graphics Printer (IBM)	$ 225.00
Ti 820	$ 499.00
Ti 840	$ 349.00
Imagewriter	$ 325.00
Anadex 9000	$ 899.00
Scribe	$ 135.00

Multimate Advantage 3.6	$299.00
Framework II	$395.00
PUP (Printer utility)	$ 26.00

SNAP—The **ULTIMATE** Hard Disk utility
INTRODUCTORY SPECIAL .. $89.00 each

Path Minder (Hard Disk Manager)	$ 39.95
Double DOS	$ 44.00
Fast Back	$129.00
It Figures (Electronic Worksheet)	$ 39.95
Websters Spelling Checker	$ 69.95
Will Writer	$ 49.95
Jet	$ 44.00
Printshop	$ 46.00
Norton Utilities 3.1	$ 52.00
Sidekick	$ 34.00
PC Tools	$ 39.00

LASER 128

Looks like an Apple, runs like an Apple, half the price of an Apple and available for you today ..... **$ 385.00**

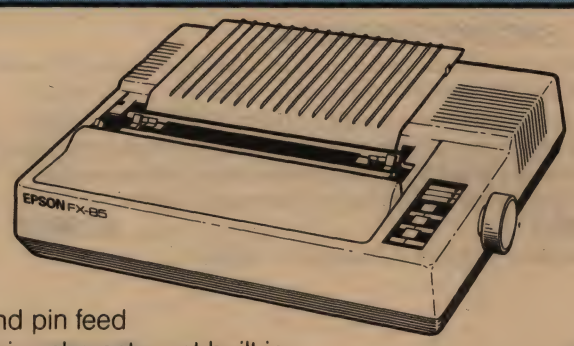
Books

MS/PC DOS	$14.95
Lotus 1-2-3	$16.95
DBase III	$18.95
PSS (complete series)	$18.95
Wordstar	$18.95
Customizing Wordstar	$18.95
Symphony	$18.95
Managing Your Megabytes	$29.95
RM/Gobol	$18.95
Autocad	$18.95

NDRC
8511 Manderville
Dallas, Texas 75231

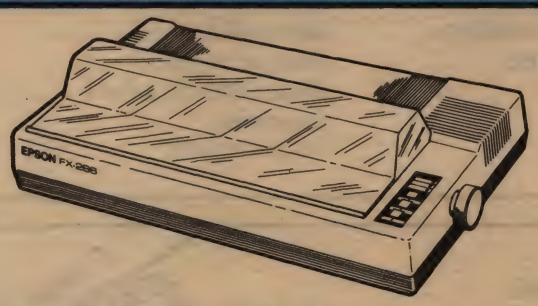
214-750-9888
Specializing in top quality and lowest prices.

America's choice and Arlington Computer Products choice is EPSON



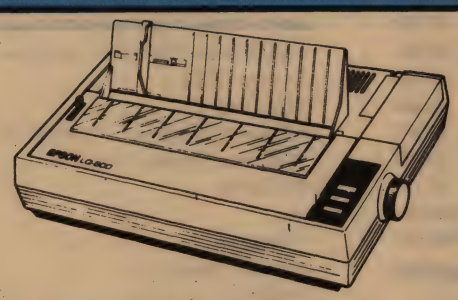
FX-85™

- Friction and pin feed
- IBM graphics character set built in
- 160 CPS printhead speed in draft mode; 32 CPS NLQ mode speed
- 80-column narrow carriage for correspondence
- Switch from draft to Near Letter Quality mode with the push of a button
- 8K internal buffer allows you to keep working on your computer while the printer is printing



FX-286™

- Prints at a fast 200 characters per second printhead speed in draft mode; 40 characters per second in Near Letter Quality mode.
- 136-column wide carriage to handle financial spreadsheets.
- Switch from draft mode to Near Letter Quality mode with the push of a button.
- Standard Tractor Feed and Friction Feed for use with virtually any type of paper.
- 8K internal buffer stores up to three and a half pages of data so you can use your computer while printing.
- IBM® graphics character set built-in.



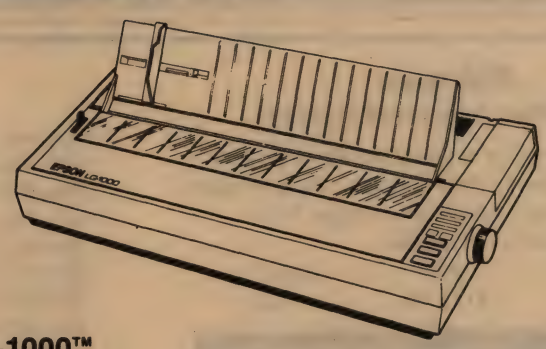
LQ-800™

- New smaller wire diameter 24 pin print head produces elegant output.
- Prints bidirectionally at a fast 180 cps print head speed in draft mode; 60 cps print head speed in Letter Quality mode.
- Easy front panel fingertip selection of draft or Letter Quality print modes.
- Optional Identity Module and font modules plug-in for software compatibility and a custom printed look.
- Built-in serial and parallel interfaces for maximum hardware capability.
- Standard 7K buffer allows you to use your computer while printing.

It's not hard to understand why. Care in design, engineering and manufacturing have made Epson an industry leader and the industry standard. And to back their reputation, a one year warranty stands behind every Epson product.

EPSON 1

Number one. And built like it.



LQ-1000™

- Speed and Letter Quality output are yours with this 136 column, 24 pin dot matrix printer.
- Prints 180 characters per second printhead speed in draft mode; or 60 characters per second in Letter Quality mode.
- Front panel fingertip selection of Letter Quality or draft mode.
- Identity Modules let you choose between Extended Epson, IBM 5152 Graphics or Diablo 630 codes.
- Standard 7K buffer allows you to use your computer while printing continues.

Arlington Computer Products, inc.
450 E. HIGGINS ROAD
ELK GROVE VILLAGE, IL 60007

Call: **800-548-5105**
In Illinois 1-312-228-6333
Corporate P.O.'s welcome

Arlington Computer Products gives you the best prices on IBM PCs...

IBM PC

2 Drives, 256K Monochrome Monitor	$1275
2 Drives, 256K, Color Monitor	$1495
2 Drives, 256K, w/10MB Monochrome Monitor	$1625

IBM XT

1 Drive, 640K, 20 MB Hard Disk, Monochrome Monitor	$2275
1 Drive, 640K, 20 MB Hard Disk, Color Monitor	$2495

IBM AT

1.2 Floppy, 512K, 20 MB Hard Disk, Monochrome Monitor	$3075
1.2 Floppy, 512K, 20 MB Hard Disk, Color Monitor	$3295

...and COMPAQ too!

COMPAQ PORTABLE

2 Drives, 256K	$1595
1 Drive, 256K w/20 MB	$1999

COMPAQ DESK PRO

1 Drive, 640K w/20 MB Green or Amber Monitor	$2275

COMPAQ 286

DESKTOP — 1 Drive, 256K w/30 MB, Monitor	$3995
PORTABLE — 1 Drive, 256K, 20 MB Hard Disk	$3795

DRIVES AND TAPES

10 MB Tape Back Up	$439
20 MB Tape Back Up for AT	$549
60 MB Tape Back Up for AT	$749
360K Floppy for AT	$115
360K Floppy for PC/XT	$ 99

SEAGATE

10 MB Hard Disk Kit	$379
20 MB Hard Disk Kit	$419
30 MB for AT	$609
40 MB for AT	$749

BOARDS

HERCULES GRAPHICS CARD	$195
HERCULES COLOR CARD	$145
SIGMA COLOR 400	$419
STB EGA	$299
PARADISE AUTOSWITCH	$359
QUADRAM EGA	$379
AST ADVANTAGE W/128 K	$349
AST RAMPAGE	$269
AST RAMPAGE AT	$409
INTEL ABOVE BOARD	CALL
ORCHID PC TURBO W/DAUGHTERBOARD	$499
AST 5251-11	$569

MODEMS

HAYES 1200	$365
HAYES 1200B ALONE	$299
HAYES 1200B W/SOFTWARE	$335
HAYES 2400	$565

MONITORS

AMDEK		PRINCETON	
310A	$145	MAX 12	$159
600	$399	HX12E	$505
722	$505	SR12	$565

THOMPSON COLOR	349
NEC MULTISYNC	$559

★ISSUE HIGHLIGHTS★

AST 6 PACK PLUS 384K $199	EVEREX THE EDGE $219	NEC MULTISYNC MONITOR $559
HERCULES COMPATIBLE COLOR CARD $69	HERCULES COMPATIBLE GRAPHICS CARD $95	PRINCETON HX12 MONITOR (incl. cable) $415
EVEREX 300/1200 INTERNAL MODEM W/SOFTWARE $149	SEAGATE 20MB KIT FOR PC/XT $419	PC MOUSE W/DR. HALO II $104

SOFTWARE

WORDPERFECT 4.1	$205	D BASE III PLUS	$405
WORDSTAR 2000	$229	FRAMEWORK	$389
WORDSTAR 2000+	$289	ENABLE	$329
WORDSTAR PRO	$239	LOTUS 123	$325
MULTIMATE	$205	SYMPHONY	$429
MULTIMATE ADV.	$245	HARVARD TOTAL PROJECT MGR.	$265
VOLKSWRITER III	$145	SMARTCOM II	$ 79
TURBO LIGHTENING	$ 59	CROSSTALK	$ 95
R BASE 5000	$319	NORTON UTIL.	$ 59
REVELATION	$499		

PRINTERS

EPSON

LX 80	$229	LQ 800	$499
LX 90	$259	LQ1000	$689
FX 85	$339	DX 20	$319
FX 286	$469	DX 35	$619

OKIDATA

ML192 IBM	$339
ML193 IBM	$475
84 IBM	$635

TOSHIBA

321	$439
341	$795
351P	$975
351P/S	CALL

NEC

P5	$1149
P6	$475
P7	$639

PANASONIC

1091	$269
1092	$339

SILVER-REED

EXP 800	$669

IBM

PROPRINTER	$409
PROPRINTER XL	$599

Arlington Computer Products, inc.
450 E. HIGGINS ROAD
ELK GROVE VILLAGE, IL 60007

VISA MasterCard

FOR ORDERS & SYSTEMS QUOTES:

800-548-5105

CUSTOMER SERVICE AND IN ILLINOIS CALL 312-228-6333

Prices and Availability Subject To Change Without Notice

Radio Shack continued from page 14

you trust your dealer's repair ability). We've called a few of the "800-numbers" to see what the response is to repair questions. "Take it to *any* computer store" won't satisfy many hobbyists, let alone business users! The CEO of one of the best known imports recently told the *Wall Street Journal* his secret to making money in the business... "Knowing when to get in, *and knowing when to get out !*" I wonder where his owners will be when he decides it's time to get out?

Tandy prices are competitive with most of the imports. We believe the Tandy/Radio Shack repair and support network, and our financial strength and stability as a $3-billion corporation will be viewed as very attractive by value-conscious PC buyers.

The Sales Force

We're surprised by the number of people who think Radio Shack "waits behind the counter for customers to walk in." While it's mostly true of our retail business, the business products operations are different. Our Computer Centers are unique, in that they're really two businesses in one. Each Center has one or two Retail Marketing Representative (there are 750 of them in 489 Centers), who serve only walk-in trade. They also do follow-up selling to existing customers... paper, ribbons, new printers, etc.

The Computer Centers' "second business," and the heart of our business sales effort, is the largest "outbound" sales force devoted exclusively to PCs. You've probably read about them recently or at least their dress code, which received an unbelievable amount of press.

That sales force is 1,500 marketing representatives who call on customers at their place of business. They participate in one of the most intense sales training programs in the industry... so intense that only about 7 finish out of every 10 who start the course. All members of business products field management have also completed an expanded version of this training.

We have recently upgraded our sales compensation plan, allowing us to recruit people with proven sales records from competition. We have also recruited top-of-class college graduates... about 250 of whom have been trained and put in place in the past 3 or 4 months. It's a very aggressive expansion into the world of outside selling, but we feel it's essential to our countinued success in the business marketplace.

The Bottom Line(s)

So, Stan, what's happening really is that Tandy and Radio Shack decided in 1977 to be a serious player in the personal computer market. We owned that market in the early years because nobody knew how to sell 'em, and the early customers were our kind of customers. Since that time, our efforts haven't received the press lavished on a giant like IBM, or an example of the "Great American Dream" like Apple, or the first company to reach $100 million in sales its first year like Compaq. But as one analyst recently pointed out, we've never failed to rank in the top 3 PC companies.

Yes it's been a transition for a retail consumer electronics company to become a serious competitor in a business products market dominated by outbound selling. We're doing it, and quite successfully. The secret to that success has been to recognize the unique requirements, the time sensitivity on repairs, and the priorities of business customers... and build a distribution and support system to address those needs specifically. The last piece of the puzzle has been to upgrade our sales force, and as you can see that's now in place. This should be a really exciting year at Tandy Corporation and Radio Shack. But the big winners will unquestionably be our customers. They can look for the best service and support in the PC industry, backing up the most innovative American-made PC-compatible products, from a stable, secure company, at very affordable prices. ●

IBM AT™ COMPATIBLE
MACH 8* BY VECTOR RESEARCH

*Eight times faster than IBM PC/XT™ by Norton Utilities™ SI Speed Test

COMPATIBILITY
- PHOENIX™ BIOS (AT&T™, ITT™ & TANDY™ can't all be wrong).
- Our 360K FD drive insures full disk compatibility with existing PCs and XTs.

RELIABILITY
- State-of-the-art large scale integrated (LSI) chip set reduces the main board IC count from 110 to 36.
- 30-day moneyback guarantee.
- 1 year limited replacement warranty.

EXPANDABILITY
- Motherboard designed to run at over twice the clock speed of the standard IBM AT™ (8 MHZ 80286 and chip set on board upgradable to 12.5 MHZ).
- 512K upgradable to 1MB on board (4MB with our AT memory card).
- 80287 coprocessor and CPU run at the same clock speed (50% faster than IBM™).

AFFORDABILITY
- Our price speaks for itself.

VR

VECTOR RESEARCH
803 S. ADAMS
FREDERICKSBURG, TX 78624
(512) 997-6001

WHY LOGICSOFT IS THE #1 SOURCE FOR IBM-PC & COMPATIBLE HARDWARE, SOFTWARE AND SYSTEMS.

FREE OVERNIGHT DELIVERY.

Buy it today . . . use it tomorrow! Only Logicsoft ships your order the same day via overnight courier* . . . at no additional cost to you.

OUR LOWEST PRICE GUARANTEE.

We're so confident about our low prices that if you can find a lower price, we'll beat it by $10**. This includes any bonafide advertised price or quote on any of the hundreds of products we stock. Our Corporate Accounts Program also offers attractive volume discounts. Credit cards and PO's accepted.

FREE INSTALLATION ON LEASED SYSTEMS.

A Logiclease of any system entitles you to FREE installation and 90-day service contract at your place of business! High tech without high cost. Outstanding flexibility. Plus possible tax benefits. Give Logicsoft a call–we'll process your lease application in 24 hours! A purchase of any system entitles you to installation for *only $99*.

FREE 90-DAY, ON-SITE SYSTEM SERVICE CONTRACT.

Whether you purchase or lease a system from Logicsoft, you get a unique bonus: *a free 90-day, on-site system hardware service contract.* We've contracted with one of the nation's largest and most respected independent computer maintenance firms to provide you free service in most metropolitan areas at your facility. Expert assistance is only a phone call away.

TOLL-FREE CUSTOMER SERVICE.

Customer service and technical support are only a toll-free call away. It's another reason why Logicsoft has become the major supplier of hardware and software to more than 50,000 companies worldwide, including over 90% of the Fortune 1000.

LOGICSOFT®

To order or receive technical assistance, call our National Hotline:

1-800-645-3491

NY STATE: 1-800-235-6442 (516) 249-8440
Customer Service: 1-800-431-9037 NYS: 516-249-8440
FAX #516-249-5289

110 Bi-County Blvd., Dept. G
Farmingdale, NY 11735
CANADA: 416-283-2354
Domestic/Int'l Telex
286905 SoftUR

EUROPE: 020-83 48 64
Telex: 10759 Logic NL
Mail orders to:
LOGICSOFT EUROPE BV
pb 9460, 1006 AL Amsterdam, Holland

*Applies to order totaling over $100. Shipped UPS—free if under $100 (within Cont. U.S.). Due to weight restrictions, printers and monitors are shipped UPS—free.
**This offer does not apply to items under $100, American Express or Terms orders. In these instances, we will meet any lower price. (We reserve the right to request a current price quote.)
†Lease proposals subject to credit approval. First and last lease payments required in advance. Rates based on current cost of funds.

LEASE OR PURCHASE THESE SYSTEMS FROM LOGICSOFT.

100% Burn-In and Testing. All systems undergo a 48-hour configuration, testing and burn-in period. We install floppy and hard disk drives, configure system boards, set DIP switches, format hard drives, perform memory diagnostics and check system with monitor.

Leading Edge Model D

• 256K Memory • Two 360K Half/Height Floppy Drives • Four Expansion Slots • Keyboard • Text Display Card • High-Resolution Monochrome Monitor • One Parallel And Serial Port
• **Purchase Price: $1,375**

Lease For **$59** per month

New IMB AT—30Mb

8 MHz • 512K • 30 Mb Hard Drive (Full Height, w/controller) • 1.2 Mb Half/Height Floppy • Eight Expansion Slots • IBM Enhanced PC Keyboard • Serial/Parallel Adapter • Free 90-Day, On-Site Service Contract • Color or Monochrome Monitor Available as Option
• **Purchase Price: $4,179**

Lease For **$165** per month

New IBM XT—20Mb

512K • 20 Mb Hard Drive • 360K Floppy Drive Half Height • Eight Expansion Slots • IBM Enhanced PC Keyboard • Asynchronous Communications Adapter • Free 90-Day, On-Site Service Contract • Color or Monochrome Monitor Available as Option
• **Purchase Price: $2,369**

Lease For **$99** per month

New Compaq Deskpro 286—30 Mb

• 512K RAM Memory • 80286 Based CPU • One 30Mb Hard Drive (w/controller) • One 1.2 Mb Half/Height Floppy Drive • Eight Expansion Slots • Compaq Keyboard • Graphics Card • One parallel port • Free 90 Day On-Site Service Contract • Color or Monochrome available as option
• **Purchase Price: $3,859**

Lease For **$152** per month

New Compaq Portable II—20 Mb

• 640K RAM Memory • 80286 Based CPU • One 20Mb Half/Height Hard Drive (w/controller) • One 360K one/third Height Floppy Drive • Two Expansion Slots • Compaq II Keyboard • Text/Grahics Display Card • 9" Text/Graphics Monochrome Monitor • One Parallel Port • Free 90-Day, On-Site Service Contract
• **Purchase Price: $3,879**

Lease For **$153** per month

ITT XTRA (Dual Floppy)

• 256K RAM Memory • Two 360K half/height floppy drives • 4.77 MHz Intel 8088CPU • 5 expansion slots • ITT keyboard • Text display card • ITT monochrome monitor (amber or green). One parallel and serial port • Color option available
• **Purchase Price: $1339**

Lease For **$58** per month

TOSHIBA Lap-Top T-1100 Plus (Dual Floppy)

• 640K RAM Memory • CMOS 80C86 Running at 7.1 MHz • Two 720K 3.5" Floppy Drives • One Expansion Slot • TOSHIBA Keyboard • LCD Display • Color Graphics/Monochrome Composite Card • One Parallel and Serial Port • Clock Calendar • External Floppy Drive Optional
• **Purchase Price: $1799**

Lease For only **$76** per month

INTRODUCING LOGICWARE FULLY COMPATIBLE COMPUTER PRODUCTS.

Made in U.S.A. • High Reliability • Immediate Replacement or Repair Policy • Low Power Consumption • 5-Year Unconditional Warranty

A. AST Compatible Six Function Card w/384K—$159

• One Parallel Port • One Serial Port • Clock Calendar • 384K Memory • Low Power Consumption • Printer/Spooler Buffer

AST Compatible AT Multi-Function w/128K—$219

B. Hercules Compatible Monochrome Graphics Board—$119

• 720 × 348 Pixel Graphics • Parallel Printer Port • Lotus 1-2-3 Compatible • TTL Monochrome Output • ATD Software Supplied For Direct Emulation Of Hercules Graphics Card

C. Hayes 1200 Compatible External Modem—$199

• Requires Any RS232 Serial Port • Bell 102/212A Compatible • Speaker w/Volume Control

D. AST Compatible 576K Ram Board Half Card with Ø K—$69

• Expandable To 576K • Supports 64K Or 256K Memory Chips • Fits In Short Slot • Low Power Consumption • Clock Calendar Option
loaded w/384K $115.00 loaded w/576K $125.00

E. Hercules Compatible Color Graphics Board—$99

• 640 × 200 Mono And 320 × 200 Color Pixels
• Parallel Printer Port • Low Power Consumption
• Fits In Short Slot

F. Hayes 1200 B Compatible Half Card Modem w/Software—$149

• 300/1200 Baud • Bell 103/212A Compatible • Auto Dial/Auto Answer • Pulse or Touch Tone Dialing • Full or Half Duplex Operation • Fits in Short Slot • Low Power Consumption

Hayes 2400B Compatible Half Card Modem w/Software—$299

• No surcharge for MasterCard, VISA, American Express. C.O.D., money order, check or PO's (please call for price verification) • No sales tax on orders shipped outside N.Y. State • Please add 2% for insurance and handling (Int'l orders add'l) • We do not bill until we ship. All products covered by mfg's warranty. Defective merchandise may be returned for repair or exchange only. We do not guarantee compatibility. Any goods returned for credit are subject to a 15% restocking charge.

SOFTWARE FOR VIRTUALLY EVERY IBM-PC APPLICATION.

WORD PROCESSING
- Display Write III $369
- Easy Writer II 195
- Microsoft Word 3 269
- Multimate 235
- Multimate Advantage 277
- Office Writer 245
- PFS Write 85
- Volkswriter III 147
- Word Perfect 199
- Wordstar 175
- Wordstar Pro Pak 239
- Wordstar 2000 245
- Wordstar 2000 Plus .. 295
- XY Write III 219

WORD PROCESSING ADD-ONS
- Fancy Font $145
- Punctuation & Style .. 75
- Turbo Lightning 59
- Word Finder 59

DATABASE MANAGEMENT
- Cornerstone ..... $ 75
- d Base III Plus 429
- Knowledgeman/2 275
- Paradox 495
- PFS File 85
- PFS Report 79
- Powerbase 209
- Q & A 215
- R: Base 5000 265
- Revelation 495
- Reflex 59
- Think Tank 109

DATA BASE MGMT. ADD-ONS
- Clipper $349
- Clout 2 139
- Ext Report Writer 85
- Quickcode III 145
- Quick Report 139

SPREADSHEET/ INTEGRATED
- Ability ..... $ 69
- Enable 339
- Framework II 417
- Lotus 123 317
- Multiplan 119
- Smart Series 409
- Supercalc IV (NEW) .. 279
- Symphony 443

SPREADSHEET ADD-ONS
- Lotus Report Writer .. $109
- Cambridge Spreadsheet Analyst 75
- Sideways 45
- Spreadsheet Auditor . 99
- Quickcode for 1-2-3 .. 85

DESKTOP PUBLISHING
- Sc LASERplus $329
- SofType 795

GRAPHICS
- Chartmaster $209
- Diagram Master 195
- Energraphics w/Plotter Option 289
- Graphwriter 219
- Harvard Presentation Graphics 295
- Map Master 229
- Microsoft Chart 179
- PFS Graph 85
- Sign Master 149

CAD/CAM
- Auto CAD $247
- Pro Design II 237

LANGUAGES
- C Compiler (MS) $237
- Cobol Compiler (MS) . 425
- Fortran Compiler (MS) 217
- Lattice C Compiler ... 259
- Macro Assembler (MS) 97
- Pascal Compiler (MS) . 83
- Quick Basic (MS) 67
- True Basic 119
- Turbo Pascal (plus BCD & 8087) 65

PROJECT MANAGEMENT
- Harvard Total $285
- Microsoft Project 237
- Super Project Plus ... 257
- Timeline 235

FINANCIAL
- Managing Your Money $109
- Dollars and Sense ... 107

ACCOUNTING
- BPI Entry $299
- Computer Associates (formerly IUS) 317
- Dac Easy **Lowest Price Call!**
- Great Plains 447
- Open Systems (3.0) .. 417
- State of the Art 355
- TCS Client Write Up .. 949
- Real World 475

MISC/UTILITIES
- Copy II PC ..... $ 35
- Crosstalk XVI 99
- Fast Back 93
- Microsoft Windows .. 67
- Norton Utilities 55
- Prokey 77
- Remote 99
- Sidekick 47
- Superkey 45

FREE INSTALLATION ON LEASED SYSTEMS

OVER 200 OTHER SOFTWARE TITLES IN STOCK AT LOW DISCOUNT PRICES.

A HUGE SELECTION OF PERIPHERALS.

PRINTERS*
CANON
- Bubble Jet BJ-80 .... $449

EPSON
- LQ 800 569
- LQ 1000 739
- FX-85 389
- FX-286 589

JUKI
- 6100 359
- 6300 709

NEC
- Pinwriter P-5 Series ..... **Low Price Call!**
- Pinwriter P-6 469
- Pinwriter P-7 699

OKIDATA
- 182 Plug & Play 223
- 192 Plug & Play 349
- 193 Plug & Play 545
- 2410 P Plug & Play ... 1729

PANASONIC
- KX-1091 225
- KX-1595 645

TOSHIBA
- P 321 489
- P 341 795
- P 351 999

CITIZEN
- MSP 10 289
- MSP 15 399
- MSP 20 339
- MSP 25 499
- Premier 35 509

LASER PRINTERS*
CANON
- Laser Printer $1995

HEWLETT PACKARD
- Laser Printer 2499
- Laser Printer Plus .. 3299
- Laser Jet 500 (+) ... 4399

OASYS
- Laser Pro Express .. 1699

PLOTTERS*
FACIT
- 4550 (6 Pen Plotter) . $ 395

HEWLETT PACKARD
- 7475A 1699
- 7550 3399

HOUSTON INSTRUMENTS
- DMP 40 899
- DMP 41 2599
- DMP 42 2599
- DMP 51 3899
- DMP 52 3899
- DMP 52 MP 4889

MONITORS*
AMDEK
- Color 600 ..... $ 389
- Color 722 489
- Color 725 .. **Low Price Call!**
- 12" Amber 310A 149

NEC
- JC—1401P 3A Multi-sync color w/swivel base 559

IBM
- Color Monitor 539
- Monochrome Monitor 225
- Enhanced Color Display 679

PRINCETONE GRAPHICS
- RGB HX-12 419
- RGB HX-12E 535
- RGB SR-12 569
- RGB SR-12P 615
- Amber Max 12 159

QUADRAM
- Amberchrome 12" ... 145
- Enhanced Graphics Monitor w/swivel .. 549

TAXAN
- 121/122 145
- 620 415

MULTI-FUNCTION BOARDS
AST RESEARCH
- Six Pack Premium ... $385
- Six Pack Plus (384K) .. 229
- Rampage w/256K 269
- Rampage (AT) w/512K . 459
- Advantage (128K) 369
- I/O Mini Half Card ... 119
- I/O Plus II 125

EVEREX
- Magic Card II w/384K . 199

TECMAR
- Captain (384K) 209

QUADRAM
- Quadboard (384K) ... 199
- Silverboard 219
- Ems w/256K 339
- Liberty (AT) w/128K ... 315

INTEL
- Above Board (PC) w/64K 275
- Above Board (AT) w/128K 419
- Above Board (PS) 64K 319
- Above Board (PS) 256K 389
- 8087-2 Math Co-Processor 139
- 8087-3 Math Co-Processor 179
- 80287 Math Co-Processor 209

GRAPHICS BOARDS
AST
- Preview $239

EVEREX
- Evergraphics ..... **Low Price Call!**
- The Edge 239

HERCULES
- Monochrome Graphics Card 199
- Color Card 155

PARADISE SYSTEMS
- Auto Switch EGA Card $359
- Modular Graphics Card 249
- Color/Mono 159

QUADRAM
- EGA Plus Graphics .. 379

SIGMA
- EGA Board 369
- Color 400 (Princeton) . 479

STB
- Chauffeur 229
- EGA Plus 319

TECMAR
- Graphics Master 399

COMMUNICATIONS BOARDS
AST
- 5251-11 ..... $629

DCA
- IRMA Board 799

MODEMS
AST
- Reach 1200 Half Card . $345

EVEREX
- Evercom II 149

HAYES
- Smartmodem 1200 ... 389
- Smartmodem 1200B w/Smartcom II 359
- Smartmodem 2400 .. 599
- Smartmodem 2400B w/Smartcom II 549

PROMETHEUS
- Pro-modem 1200B w/software 239

QUADRAM
- Quadmodem Series ..... **Low Price Call!**

VEN-TEL
- PC Modem 1200 Half Card 365
- 1200 Plus 329
- PC Modem 2400 Half Card 479

MOUSE INPUT DEVICES
MOUSE SYSTEMS
- PC Mouse w/DR Halo 2 ..... $129

MICROSOFT
- Microsoft Mouse (Serial) 135
- Microsoft Mouse (Buss) 125

SURGE PROTECTORS
KENSINGTON MICROWAVE
- Masterpiece Plus $119

CURTIS
- Diamond 39
- Emerald 45
- Ruby 59

KEYBOARDS
KEYTRONIC
- 5151 (Deluxe) $169
- 5153 (w/touch Pad) ... 279
- 3270 PC 235
- Keytronic Jr. 5151 169

MEMORY STORAGE
IOMEGA
- Bernoulli Box (10+10) $2329
- Bernoulli Box (20 Mb) 2299
- Bernoulli Box (20 + 20) 3179
- Bernoulli Box Plus .. 4199

HARD DISK DRIVES
MOUNTAIN COMPUTER
- Hard Drive Card (20 Mb) $889
- Hard Drive Card (30 Mb) 1049

PRIAM CORP
- 60 Mb Internal Hard Drive 1449
- Innerspace ID 40 Mb . 1249

PLUS +
- Hard Card 10 Mb 629
- Hard Card 20 Mb 699

SEAGATE
- 10 Mb ½ Ht Int 465
- 20 Mb ½ Ht Int 489
- 30 Mb ½ Ht Int 539
- 20 Mb Full Ht (AT) 599
- 30 Mb Full Ht (AT) 749
- 40 Mb Full Ht (AT) 879
- 60 Mb Full Ht (AT) 1249

CORE
- 20 Mb Int (AT) 1249
- 30 Mb Int (AT) 1349
- 40 Mb Int (AT) 1495
- 72 Mb Int (AT) 2749

CARTRIDGE TAPE BACK-UP
EVEREX
- Excel Stream 20 Mb Int $639
- Excel Stream 60 Mb Int 799
- Excel Stream 60 Mb Ext 929

IRWIN
- Irwin 110 10 Mb Int ... 499
- 20 Mb Int 595
- 20 MB 325 (AT) Ext. D . 779

SYSGEN
- Image Tape Backup 10 Mb Int 789
- Image Tape Backup 20 Mb Int 599
- Image Tape Backup 20 Mb Ext 649

TECMAR
- QIC 60 AT 1239
- QIC 60 Ext Tape Backup 1579

CORE
- 60 Mb Ext 1599

FLOPPY DISK DRIVES
- Panasonic 360 K ½ Ht. $119
- Tandon TM-100 360 K F/Ht. 125
- Tandon TM-100 360 K ½ Ht. 105
- Toshiba 360 K ½ Ht... 115

BACK UP POWER SUPPLIES
DATA SHIELD
- 200 Wt (PC) $249
- 300 Wt (XT) 359
- 500 Wt (AT) 569
- 800 Wt (AT) 655

*Due to weight restrictions, Printers and Monitors are shipped UPS—free. **Parallel interface req. ..... Ask sales agent. All prices and policies subject to change without notice.

LOGICSOFT®

110 Bi-County Blvd., Dept. G
Farmingdale, NY 11735
CANADA: 416-283-2354
Domestic/Int'l Telex
286905 SoftUR

To order or receive technical assistance, call our National Hotline:

1-800-645-3491

NY STATE: 1-800-235-6442 (516) 249-8440 Customer Service: 1-800-431-9037
NYS: 516-249-8440 FAX #516-249-5289

EUROPE: 020-83 48 64
Telex: 10759 Logic NL
Mail orders to:
LOGICSOFT EUROPE BV
pb 9460, 1006 AL Amsterdam, Holland

Super Disk™ Diskettes

Now...Diskettes you can swear by, not swear at.

Lucky for you, the diskette buyer, there are many diskette brands to choose from. Some brands are good, some not as good, and some you wouldn't think of trusting with even one byte of your valuable data. Sadly, some manufacturers have put their profit motive ahead of creating quality products. This has resulted in an abundance of low quality but rather expensive diskettes in the marketplace.

A NEW COMPANY WAS NEEDED AND STARTED

Fortunately, other people in the diskette industry recognized that making ultra-high quality diskettes required the *best* and newest manufacturing equipment as well as the best people to operate this equipment. Since most manufacturers seemed satisfied to give you only the everyday quality now available, an assemblage of quality conscious individuals decided to start a new company to give you a new and better diskette. They called this product the *Super Disk* diskette, and you're going to love them. Now you have a product you can swear by, not swear at.

HOW THEY MADE THE BEST DISKETTES EVEN BETTER

The management of *Super Disk* diskettes then hired all the top brains in the diskette industry to make the *Super Disk* product. Then these top bananas (sometimes called floppy freaks) created a new standard of diskette quality and reliability. To learn the "manufacturing secrets" of the top diskette makers, they've also hired the remaining "magnetic media moguls" from competitors around the world. Then all these world class, top-dollar engineers, physicists, research scientists and production experts (if they've missed you, send in your resume to *Super Disk*) were given one directive...to pool all their manufacturing know-how and create a new, better diskette.

HOW SUPER DISK DISKETTES ARE MANUFACTURED

The *Super Disk* crew then assembled the newest, totally quality monitored, automated production line in the industry. Since the manufacturing equipment at *Super Disk* is new, it's easy for *Super Disk* to consistently make better diskettes. You can always be assured of ultra-tight tolerances and superb dependability when you use *Super Disk* diskettes. If all this manufacturing mumbo-jumbo doesn't impress you, we're sure that at least one of these other benefits from using *Super Disk* diskettes will:

1. **TOTAL SURFACE TESTING** - For maximum reliability, and to lessen the likelihood of disk errors, all diskettes must be totally surface tested. At *Super Disk*, each diskette is 100% surface tested. *Super Disk* is so picky in their testing, they even test the tracks that are in between the regular tracks.
2. **COMPLETE LINE OF PRODUCTS** - For a diskette to be useful to you and your computer, it must be compatable physically. *Super Disk* has an entire line of 5¼-inch and 3½-inch diskettes for your computer.
3. **SPECIALLY LUBRICATED DISK** - *Super Disk* uses a special oxide lubricant which is added to the base media in the production of their diskettes. This gives you a better disk drive head to media contact and longer head and disk life.
4. **HIGH TEMPERATURE/LOW-MARRING JACKET** - A unique high temperature and low-marring vinyl jacket allows use of their product where other diskettes won't work. This special jacket is more rigid than other diskettes and helps eliminate dust on the jacket.
5. **REINFORCED HUB RINGS** - Standard on all 48 TPI *Super Disk* mini-disks, to strengthen the center hub hole. This increases the life of the disk to save you money and increase overall diskette reliability.
6. **DISK DURABILITY** - *Super Disk* diskettes will beat all industry standards for reliability since they will give you more than 75% of the original signal amplitude remaining even after an average (Weibul B-50) of 30 million passes. They are compatible with all industry specifications as established by ANSI, ECMA, ISO, IBM and JIS.
7. **CUSTOMER ORIENTED PACKAGING** - All *Super Disk* disks are packaged 10 disks to a carton and 10 cartons to a case. The economy bulk pack is packaged 100 disks to a case without envelopes or labels.
8. **LIFETIME WARRANTY** - If all else fails, remember, all disks made by *Super Disk* Inc., have a lifetime warranty. If any *Super Disk* diskette fails to meet factory specifications, *Super Disk* Inc. will replace them under the terms of the *Super Disk* warranty.
9. **SUPERB VALUE** - With Super Disk's automated production line, high-quality, error-free disks are yours without the high cost.

Order toll free 800-USA-DISK

NOW...NAME BRAND QUALITY AT SUPER CE PRICES

Now, you can buy Super Disk brand diskettes directly from Communications Electronics at prices less than "unbranded" generic diskettes. Your data is valuable, so why take chances using a diskette that could be so unreliable that the manufacturer refuses to put their name on it. To save you even more, we also offer Super Disk bulk product where 100 diskettes are packed in the same box without envelopes or labels. Since we save packaging costs, these savings are passed on to you. 5¼" diskette envelopes are also available from us. These super strong and tear resistant envelopes are only $10.00 per pack of 100. Use order # CV-5 for a 100 pack of 5¼" diskette envelopes.

39¢ per disk Quantity One

Our diskettes are packed 10 disks to a carton and 10 cartons to a case. The economy bulk pack is packaged 100 disks to a case without envelopes or labels. For best value, you should order in increments of 100 diskettes. Almost all diskettes are immediately available from Super Disk. With our efficient warehouse facilities, your order is normally shipped in less than a day.

SAVE ON SUPER DISK™ DISKETTES Product Description	Part #	Super Disk price per disc ($)
5¼" SSSD Soft Sector w/Hub Ring	6431-FA	0.64
5¼" Same as above, but bulk pack w/o envelope	6437-FA	0.39
5¼" SSDD Soft Sector w/Hub Ring	6481-FA	0.68
5¼" Same as above, but bulk pack w/o envelope	6487-FA	0.43
5¼" DSDD Soft Sector w/Hub Ring	6491-FA	0.74
5¼" Same as above, but bulk pack w/o envelope	6497-FA	0.49
5¼" DSQD Soft Sector (96 TPI)	6501-FA	1.09
5¼" Same as above, but bulk pack w/o envelope	6507-FA	0.84
5¼" DSHD for IBM PC/AT - bulk pack	6667-FA	2.07
3½" SSDD (135 TPI) - bulk pack	6317-FA	1.67
3½" DSDD (135 TPI) - bulk pack	6327-FA	1.99

SSSD = Single Sided Single Density; SSDD = Single Sided Double Density; DSDD = Double Sided Double Density; DSQD = Double Sided Quad Density; DSHD = Double Sided High Density; TPI = Tracks per inch.

BUY YOUR DISKETTES FROM CE WITH CONFIDENCE

To get the fastest delivery of your diskettes, phone your order directly to our order desk and charge it to your credit card. Written purchase orders are accepted from approved government agencies and most well rated firms at a 10% surcharge for net 10 billing. For maximum savings, your order should be prepaid. All sales are subject to availability, acceptance and verification. All sales are final. All prices are in U.S. dollars. Prices, terms and specifications are subject to change without notice. Out of stock items may be placed on backorder or substituted for equivalent product unless we are instructed differently. A $5.00 additional handling fee will be charged for all orders with a merchandise total under $50.00. All shipments are F.O.B. CE warehouse in Ann Arbor, Michigan. COD terms are available, in U.S. UPS areas for $5.00 extra, and are payable with cash or certified check. Michigan residents add 4% sales tax or supply tax ID number.

For **shipping charges** add $6.00 per 100 diskettes and/or any fraction of 100 5¼-inch or 3½-inch diskettes for U.P.S. ground shipping and handling in the continental U.S. For 1,000 or more disks shipped to the continental U.S., shipping charges are $4.00 per hundred diskettes. UPS 2nd day air rates are *three* times continental U.S. rates. For Canada, Puerto Rico, Hawaii, Alaska, or APO/FPO delivery, shipping is *three* times the continental U.S. rate.

Mail orders to: Communications Electronics Inc., Box 1045, Ann Arbor, Michigan 48106-1045 U.S.A. If you have a Visa or Master Card, you may call and place a credit card order. Order toll-free in the U.S. Dial 800-USA-DISK. In Canada, order toll-free by calling 800-CA1-DISK. If you are outside the U.S. or in Michigan dial 313-973-8888. Telex anytime 810-223-2422. Order your Super Disk diskettes now.

Copyright © 1986 Communications Electronics Inc. Ad #031386-FA

Now 39¢ a disk

DSI

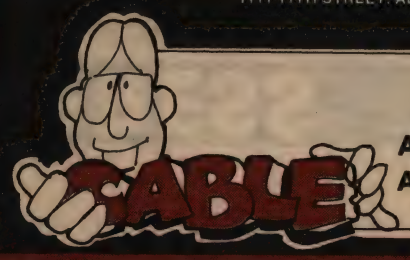
DIGITAL SOLUTIONS, INC.

1111 11TH STREET, ALTOONA, PENNSYLVANIA 16601

MULTI FUNCTION BOARDS

(5 YR. WAR.)

384K, Ser., Par., Clock, 300/1200 Modem	349.95
384K, Ser., Par., Clock, Game	79.95
Multi I/O, Disk Cont., Ser., Par.—PC/XT	89.95
Multi I/O, Disk Cont., Ser., Par.—AT	89.95
2 Meg Ram, 2 Ser, Par—AT	149.95
3 Meg Ram, 1 Ser, Par—AT	199.00
Clock Card	29.95



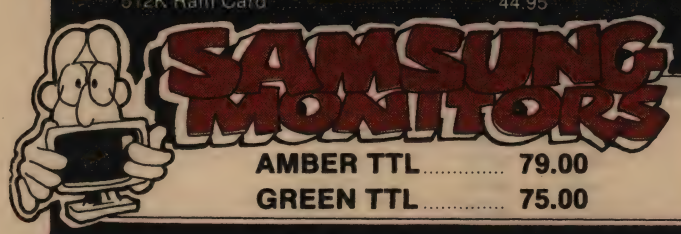
ANY 6' CABLE 5.99
ANY 10' CABLE 9.99

MOTHER BOARDS POWER SUPPLIES

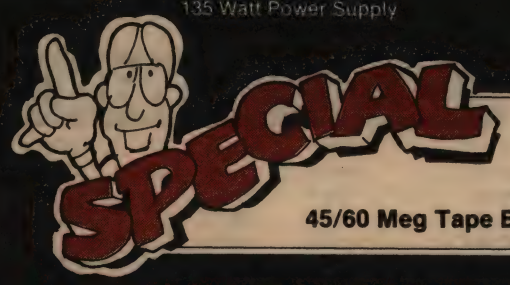
80286 (1MB) Mother Board (6/8 MHZ)	595.00
8088 (1MB) PC/XT Mother Board	109.95
192 Watt Power Supply	139.95
150 Watt Power Supply	99.95
135 Watt Power Supply	89.95

MEMORY EXPANSION CARDS

576K Ram Card	49.95
2 Megabyte Ram Card—XT	99.95
512K Ram Card	44.95



AMBER TTL 79.00
GREEN TTL 75.00



45/60 Meg Tape Backup...795.00

DISPLAY PRINTER ADAPTERS

Monochrome Display Adapter	49.95
Monochrome/Printer Adapter (Hercules Comp.)	89.95
Printer Card	21.95
RS232 Adapter	24.95
Color Graphics	64.95
EGA Adapter	249.95
Color Graphics w/Printer	79.95

HARD DISKS

Seagate 10 w/WD Controller	389.00
Seagate 20 w/WD Controller	445.00

*All cables included

FOR OUR
24 MHZ AT MOTHERBOARD
ARRIVING SOON!

KEYBOARDS

PC/AT Compatible	59.95
5150 Compatible	59.95
5151 Compatible	89.95

RAM CHIPS

High Speed 64K Chips	1.25
High Speed 256K Chips	3.00

STAR PRINTERS

NX—10	249.95	SR—15	589.95
SG—15	369.95	SD—10	334.95
SR—10	475.95	SD—15	449.95

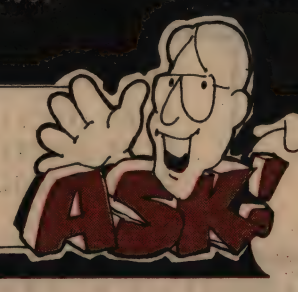
Call TOLL FREE!
800/323-7472
800/32•DSIPC
IN PA CALL
814/944-0405

- FIRST CLASS SUPPORT
- TOLL-FREE ORDERING
- FREE SHIPPING
  U.P.S. GROUND
  (MINIMUM ORDER $250.00)

30 DAY MONEY BACK GUARANTEE

15 MONTH WARRANTY

ASK ABOUT OUR FCC APPROVED
XT/AT and PORTABLE COMPUTERS
Prices Start at $350.00



MasterCard VISA DISCOVER

©1986 DSI

YOU'LL FLIP FOR OUR PRICES

DYNAMIC RAMS

41256	256KX1 (100ns) $4.85	4164	64KX1 (120ns) $1.40
	(120ns) $3.25		(150ns) $1.10
	(150ns) $2.90		(200ns) $1.05
4464	64KX4 (150ns) $3.95	4416	16KX4 (150ns) $2.50

STATIC RAMS

6264 (8K x 8)	LP-12 (120ns)..... $3.95	6116 (2K x 8)	LP-2 (120ns)..... $2.15	5514 (1K x 4)	APL-2 (200ns)..... $2.95
	LP-15 (150ns)..... $2.95		LP-3 (150ns)..... $1.75		APL-3 (300ns)..... $2.25

E. PROMS

27C256	(250ns)..... $7.50	2764	(250ns)..... $3.25
27256	(250ns)..... $5.50	2732A	(250ns)..... $4.25
			* A version, programming is 21 volts
27128	(250ns)..... $3.95	2732	(450ns)..... $4.25
27C64	(200ns)..... $4.50	2716	(450ns)..... $3.25

8000's

7201..... $6.95	8088..... $5.95	8237A-5..... $7.50	8279-5..... $4.95
765A..... $6.95	8088-2..... $14.95	82C43..... $4.50	8282..... $4.95
7220D-1..... $29.95	81C55..... $4.95	8243..... $3.95	8283..... $4.95
8031A..... $6.75	8155-2..... $5.95	8251A..... $3.95	8284A..... $3.95
80C35..... $5.95	8155..... $3.25	8253-5..... $3.95	8286..... $4.95
8035..... $3.50	8156-2..... $6.95	82C53-5..... $5.95	8287..... $4.95
80C39..... $4.50	8212..... $2.75	8255A-5..... $3.95	8288..... $6.25
8039..... $3.75	8214..... $3.95	82C55A-5..... $5.95	8289..... $19.00
8080A..... $3.95	8216..... $2.75	8257-5..... $3.95	8741A..... $9.75
80C85A..... $4.95	8224..... $2.95	8259A-2..... $5.95	8748..... $12.50
8085A-2..... $5.95	8226..... $2.95	8156..... $4.50	8749H..... $14.95
8085A..... $3.95	8228..... $3.95	8259A..... $4.95	8755A..... $22.50

SPECIAL ITEMS

Replaces 8088, 8086/Speed up IBM PC 20-50%

NEC D70108D-5 (5MHZ) V20..... **$9.95**
NEC D70108D-8 (8MHZ) V20..... **$12.75**
NEC D70116D-8 (8MHZ) V30..... **$14.00**

MATH COPROCESSORS

C8087 (5MHz)..... **$115.00**
C8087-2 (8MHz)..... **$160.00**
C80287-3 (6MHz)..... **$179.00**
C80287-8 (8MHz)..... **Call!!!**

J RAM-2 Expansion Board for IBM PC or XT..... **$159.00**
J RAM-3 Expansion Board for IBM PC or XT..... **$199.00**
J RAM-AT Expansion Board for IBM AT..... **$199.00**
J RAM-AT3 Expansion Board for IBM AT..... **$320.00**

I.C. EXPRESS

15358 Valley Boulevard, City of Industry, CA 91746

TECHNICAL INFO/CUSTOMER SERVICE **(Mon.-Fri., 8-5)**
Phone: 818-369-2688

ORDER TOLL FREE
800-892-8889 Outside California
800-882-8181 Inside California

VISA

CALL FOR CURRENT PRICES & VOLUME DISCOUNTS. Price shown for Cash. Mastercard/VISA Add 3% More. Prices are subject to change. Minimum order $10.00. California residents must add 6.5% sales tax.
SHIPPING & HANDLING: UPS Ground $5.00, UPS Air $7.00 (under 1 lb.)
ALL MERCHANDISE IS 100% GUARANTEED

MasterCard

NEW 10 MHz

INTRODUCING THE

NEW QUANTUM 286 TURBO

FINALLY, PERFORMANCE EXCEEDS DEMAND

FULL IBM PC-AT COMPATIBILITY*

QUANTUM 286 TURBO - 10 MHz: $1995

- Quantum 286 Turbo Mother Board (made in U.S.A.)
- 10-8 MHz Clock Speed
- **Phoenix BIOS**
- 512K up to 1 MB onboard
- 1-RS-232 (Expandable to 2 onboard)
- One Parallel Port onboard
- 1.2 MB Floppy Drive
- Floppy/Hard Disk Controller
- 20 MB Hard Disk
- Keyboard
- One-Year Warranty

Both the Quantum 286 Turbo and the Quantum XT Turbo incorporate all the hardware developments of yesterday while maintaining the vital link of total software compatibility through the Phoenix BIOS.

XT TURBO - 8 MHz: $945

- Quantum XT Turbo mother board (made in U.S.A.)
- 8-4.77 MHz Clock Speed
- 640K onboard
- **Phoenix BIOS**
- 2 360K Floppy Drives
- FDC w/Clock Calendar
- RS-232 Port & Parallel Port
- Game Port
- Monographic Card or Color card
- Hi-Res Amber Monitor
- AT Keyboard
- One-Year Warranty

Afton Computer, Inc.

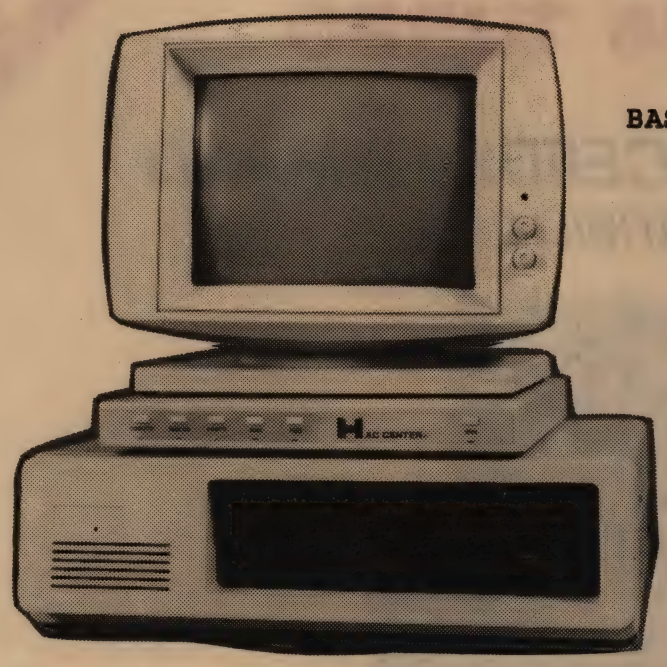
(714) 863-6951

24825 Calle El Toro Grande • El Toro, CA 92630 • FAX (714) 553-0236
Telex 756731 • Service (714) 553-1701

Prices and availability subject to change.
IBM AT is a trademark of International Business Machines Corporation.

CONNEXION TURBO XT COMPUTER

NO GIMMICKS - YOUR BEST BUY
YOU GET WHAT YOU PAY FOR



BASIC SYSTEM FEATURES:

8088-2 CPU Turbo selectable 4.77 MHz or 8 MHz
640K motherboard w/256K memory installed
Heavy duty 135 watt power supply
One DS/DD 360K floppy drive w/controller
5150 style keyboard w/lighted number and caps
Parallel/serial/game I/O ports
Clock/calendar with battery back-up
Monochrome or color graphics card
Eight expansion slots
Easy accessible flip-top metal case
Fully compatible BIOS installed
Optional 8087 math coprocessor socket installed
Speaker for audio use
Guaranteed to run MS-DOS commercial software
Ram disk software w/print spooling feature
Fully assembled and tested in U.S.A.
One year warranty

ONLY $599

Let us design a system to fit your needs!

MONITERS

SAMSUNG MONOCHROME	79
TTL HI-RES MONOCHROME	119
COLOR RGB MONITER	329

MODEMS

AVATEX 300/1200	99
INTERNAL 300/1200	199

PRINTERS

EPSON FX-85	399
EPSON FX-286	589
STAR NX-10	269
STAR SG-15	399
PANASONIC 1080	209
PANASONIC 1091	249
PANASONIC 3131	269

OPTIONAL ACCESSORIES

384K MULTIFUNCTION CARD	99
KB-5151 KEYBOARD	89
8087 MATH CO-PROCESSOR	119
DS/DD (360K) DISK DRIVE	109
MS-DOS JOYSTICK	CALL
MOUSE	59
AC CENTER SURGE PROTECT	69

SYSTEM #2 BASIC SYSTEM PLUS
ADDITIONAL DISK DRIVE
640K ON MOTHERBOARD
ONLY **$799**

FREE
PC-WRITE
PC-CALC
PC-FILE

SYSTEM #3 BASIC SYSTEM PLUS
20 MEG HARD DRIVE & CONTROLLER
UPGRADED 5151 KEYBOARD
640K ON MOTHERBOARD
ONLY **$1199**

To order call **TOLL FREE**

1-800-824-7506

ORDER LINE ONLY

No extra charge for Visa or Master Card

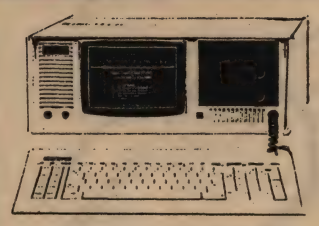
COMPUTER CREATIONS, Inc.

P.O. BOX 493 - DAYTON, OHIO 45459
For information, order inquiries, or for Ohio orders (513) 435-6868

Order Lines Open 9:00 a.m. to 8:00 p.m. Mon.-Fri.; 10 a.m. to 4:00 p.m. Sat. (Eastern Standard Time). Minimum $15 per order. C.O.D. (add $3.00). Please specify computer system. Call toll free number to verify prices and availability of product. Prices and availability are subject to change without notice. We ship C.O.D. to Continental U.S. addresses only! Please include 4% shipping on all Hardware orders (min. $4.00). Software and accessories add $3.00 shipping and handling in Continental U.S. Actual freight will be charged outside U.S. to include Canada, Alaska, Hawaii, Puerto Rico and APO. Ohio residents add 6½% sales tax. Canadian orders add 5% shipping, (min. $5.00). All other foreign orders, please add 15% shipping, (min. $10). For immediate delivery send cashier's check, money order or direct bank transfers. Personal and company checks allow 3 weeks to clear. School purchase orders welcome. Due to our low prices, all sales are final. NO CREDITS. All defective returns must have a return authorization number. Please call (513) 435-6868 to obtain an RA# or your return will not be accepted for replacement or repair. **FOR YOUR PROTECTION WE CHECK FOR CREDIT CARD FRAUD.**

* FANTASTIC PRICING

PORTABLE CASES



ONLY $440

- Dual Frequency Monitor (runs graphics or mono TTL)
- Room for 2½ H Drives and 1 Hard Drive
- 135W PS Built in
- IBM style 5150 keyboard stores in front for easy transportation
- 8 Expansion slots
- Green or Amber

COMPARE OUR INGREDIENTS

IBM COMPATIBLE SYSTEMS

PC XT

- 640K Mother Board 4.77 MHZ W/OK
- 640K RAM
- 4 Drive Floppy Disk Cont.
- Monographic TTL Adaptor w/ Printer Port
- 150 Watt U.L. Power Supply
- 2-360K Disk Drives
- Slide-on Case
- 5150 Keyboard
- Assembled and tested

ONLY $575.00

PC XT TURBO

- 640K Mother Board 4.77 MHZ & 8 MHZ Keyboard Selectable
- 640K RAM
- 4 Drive Floppy Disk Cont.
- Monographics TTL Adaptor w/Printer Port
- 150 Watt U.L. Power Supply
- 2-360K Disk Drives
- Slide-on Case
- 5150 Keyboard
- Assembled and Tested

ONLY $585.00

PC AT

- AT Mother Board
- 6-8 MHZ 1 1MG Memory
- AT Case
- 200W PS
- AT KB XT/AT SW
- 1.2 MB Drive
- WD HDC/FDC
- Monographic TTL Adaptor w/Printer Port
- Assembled and Tested

ONLY$1,268.00

ALL SYSTEMS READY TO RUN

OTHER ITEMS

640 MB 4.77 MHZ w/OK...95.00
640 MB 4.77 & 8 MHZ w/OK.....105.00
IMB AT 6 & 8 MHZw/OK..480.00
Monochrome TTL Adapter.46.00
Color Graphic Adaptor RGB & Composite.....50.00
Monographic TTL Adaptor w Printer Port.....65.00
Parallel Adaptor.....19.00
Dual Serial Adaptor.....34.00
4DRV Floppy Disk Controller, good for tape backups.....29.00
Floppy Disk Drives.....85.00
Multi I/O Card w/Clock, Serial, Parallel, & Game.....56.00
20MB Segate Hard Drive w/WD Controller.....435.00
ADAPTEC Controller (turn your 20MB into 30!)....155.00
Slide-on Case.....32.00
AT Case.....73.00
Memory Cards Exp. to 640K.....38.00

EXTERNAL MODEMS 300-1200 Baud

- Auto Answer
- Auto Dial
- Free Communications Software
- Many Extras

$95

DISKETTE BOX

100 Diskette Compartment Flip-top w/lock & key

$9

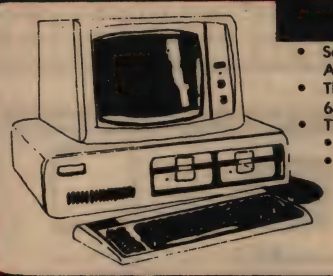
SWIVEL STAND

Features:

- Pan-tilt can be revolved around 360°
- Up and down 12.5° tiltable
- Adjustable by inside screw

$12

MONITORS



- Samsung 12" Composite Green or Amber.....60.00
- Thompson Color RGB 560/200.....288.00
  640/200.....340.00
- TTL MTR Green or Amber.....125.00
  - Samsung TTL Green or Amber.....95.00
  - Eagle TTL Green.....90.00

KEYBOARDS

5150 PC Style w/Mode Lights.....38.00
5151 AT XT Separate Key & XT/AT Switchable Cursor Pad.....57.00
AT Style XT/AT Switch w/ Large Return Key.....53.00
XT/AT Maxi Switch Return Key.....73.00

KEYBOARD DRAWER

GREAT FOR A SMALL DESK

Computer & CRT are supported by baked enamel, reinforced 20 gauge steel platform. The cantilever drawer, supported by ball bearing slides, holds a keyboard up to 2¾" (H) x 19¾" (W) x 9½" (D) and extends to a lock position.

$32.00

- *Special prices on quantity orders!*
- *6 month guarantee!*
- *Add 3% on MC & Visa.*
- *We accept cashiers checks.*
- *Please, no personal checks.*
- *We reserve the right to limit quantities.*
- *Thank you for shopping with us!*

DOS 2.1 & GW BASIC

MANUALS INCLUDED
$50.00

150W POWER SUPPLY

- 220V or 110V
- Ready for Hard Disk Tape Drive & Internal Modes

$67.00

200W POWER SUPPLY

- 220V or 110V for AT-PC
- Ready for Hard Disk Tape Drive & Internal Modes

$105.00

PRICING POLICY

Prices are subject to change without notice.

We will always try to beat or match any advertised system price we stock!

COMPETITIVE COMPUTER COMPONENTS

202 W. Center Street, Suite 101
Duncanville, Texas 75116

TO ORDER: CALL (214) 780-5796
TLX: 5106008932

Hours:
Monday Thru Friday
9:00 A.M. - 7:00 P.M.
Saturday
10:00 A.M. - 4:00 P.M.

DEALER CALLS WELCOME

COMPUTERS INTERNATIONAL

WOW GREAT Sale Prices!

Hard Drives & Tapes

10 Meg Seagate	$369	W/ Controller & Cables
20 Meg Seagate	$395	W/ Contoller & Cables
30 Meg For XT	$595	W/ Controller & Cables

Other Specials

20 Meg Hardcard (uses 1 slot) $599
20 Meg Seagate for "AT".....$549
30 Meg for "AT" $649
20 Meg Tape (Teac) w/cont. & soft .$595
65 Meg Tape (3m) w/cont. & soft ...$695

Epson Equity Computer
1 Drive
640K Memory
20 Meg Hard Disk
Monitor
Only **$1699.00**

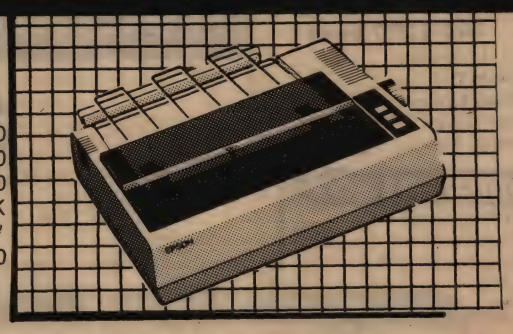
Epson FX-286
200 CPS
NCQ
Tractor Feed
In Stock Now!

Epson FX-85
160 CPS
NLQ
Tractor Feed
Special $369.00
CALL NOW!!!

Everex Products
Everex 1200 Modem $149
Everex Edge Card (Mono-Graphics-Color) $189
Everex Mini-Magic Card $129
(W/384K, 1/2 slot)
Everex Magic Multi-function $99
(Six Pac Clone)

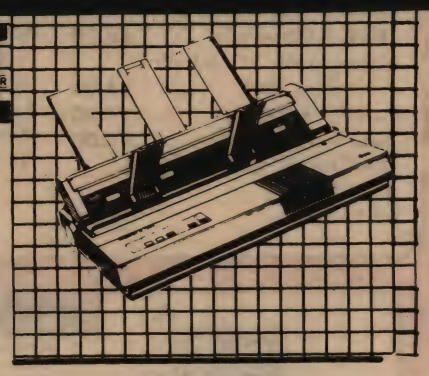
1-800-222-8324 CALL NOW!!

EPSON®

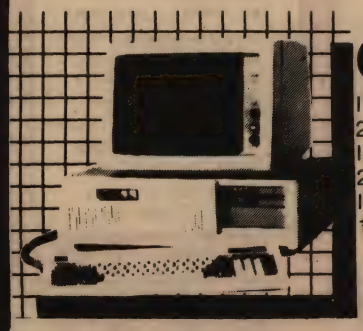


LX-80 .....$218.00
LX-90 W/PIC $269.00
FX-85+ $369.00
FX-286 .....IN STOCK
LQ-1000 .....CALL NOW!!!
LQ-1500 .....$899.00
HOMEWRITER $199

brother®



HR-10 .....$279.00
HR-15XL $369.00
HR-25 .....$499.00
HR-35 .....$749.00
2024L $795.00
M 1009.....$179.00
M 1509 NEW .....$ CALL
TWINWRITER 5 .....$ WOW
Brother Accessories ... CALL



Computers (IBM Compatibles)

	Base	Mono	Color
IDS PC-XT 8088 2 Drives MS-Dos	$595	795	995
IDS Turbo 8 Mghz 2 Drives MS-Dos	$649	895	1095
IDS AT 1 1.2 Meg Floppy/M.S. Dos	1495	1695	1895

Leading Edge ..... Call for Lowest Price
AT&T 6300 ..... Call for Lowest Price
Epson Equity I. II. III .... Call for Lowest Price

Sale on C.I. Accessories

Floppy Disks	Box of 10	Case of 100
TDK	ss/dd 11.95	115.00
	ds/dd 14.95	145.00
Maxell	ss/dd 11.99	115.00
	ds/dd 14.99	145.00

IBM Parallel Cables $10.00

— MONITORS —

SAMSUNG
AMBER TTL 12" .....$ 89
GREEN TTL 12" .....$ 85
AMBER COMPOSITE 12" .....$ 79
GREEN COMPOSITE .....$ 79

MITSUBA
510A TTL AMBER .....$ 99
w/Tilt & Swivel Stand
160A COMPOSITE 12" .....$ 99
Amber w/Tilt & ZSwivel Stand

1-800-222-8324
CALL NOW!!!!
COMPUTERS INTERNATIONAL
6619 U.S. 1, Miami, FL 33143
IN FLORIDA CALL (305) 667-5936

COMPATIBILITY • RELIABILITY
QUALITY • PRICE
FULL ONE YEAR WARRANTY

CPU — 286

- FULLY IBM PC/AT COMPATIBLE.
- 80286 CPU (8MHz).
- 8 EXPANSION SLOTS (5x62 PIN, 3x36 PIN).
- 1 MB MEMORY ON THE MOTHERBOARD.
- 200W SWITCHING POWER SUPPLY.
- CLOCK/CALENDAR WITH BATTERY BACK-UP
- 16 BIT HARD DISK/FLOPPY DISK CONTROLLER.
- DIAGNOSTIC AND SET UP DISK
- 1.2MB FLOPPY DISK DRIVE.
- STANDARD 5160 KEYBOARD.
- UP TO 3 HALF HEIGHT STORAGE DEVICES ACCESSABLE FROM FRONT PANEL.
- HARDWARE RESET BUTTON.
- POWER & HARD DISK INDICATOR LIGHTS.
- LOCKABLE CASE, ALSO SERVES AS KEYBOARD LOCK-OUT.
- ASSEMBLED AND TESTED IN U.S.A.

$1395

CPU TURBO

- KEYBOARD SELECTABLE DUAL SPEED (4.77MHz-8.0MHz)
- 68% FASTER THAN IBM PC/XT.
- FULLY IBM PC/XT COMPATIBLE.
- COMPATIBLE WITH NEC V-20 MICRO PROCESSOR.
- 640K MEMORY ON BOARD.
- 135W SWITCHING POWER SUPPLY.
- FLOPPY DISK CONTROLLER.
- 2 360K HALF HEIGHT FLOPPY DISK DRIVES.
- 8 EXPANSION SLOTS.
- POWER AND TURBO MODE INDICATOR LIGHTS.
- LOCKABLE CASE, ALSO SERVES AS KEYBOARD LOCK-OUT.
- STANDARD 5160 KEYBOARD.
- ASSEMBLED AND TESTED IN U.S.A.

$795

MINI 286
MOTHER BOARD

- AT COMPATIBLE 8MHz, XT SIZE (8.6"x13") W/AT AND XT FOOTPRINT
- REDUCE COMPONENTS BY USING VLSI TECHNOLOGY
- LESS POWER CONSUMPTION
- CMOS REAL TIME CLOCK W/BATTERY
- EXPANDABLE TO 640K / 1MB RAM ON BOARD

W / PHOENIX BIOS

$449

SPECIAL
EGA PACKAGE
$795

INCLUDES ATI ENHANCED GRAPHICS ADAPTER AND QUIMAX PX-22 ENHANCED GRAPHICS 13" PLUS MONITOR, 720x348

20MB HARD DRIVE
$439

PACKAGE INCLUDES SEAGATE 20MB HARD DRIVE, WESTERN DIGITAL CONTROLLER, CABLES, SOFTWARE, OPERATING MANUAL AND MOUNTING HARDWARE.

MONITORS

SAMSUNG HI-RES TTL	$ 79
TAXAN RGB 620	$375
TAXAN SUPER-RES RGB 630	$449
TAXAN ULTRA-RES RGB 640	$475

ADD-ON CARDS

MULTIFUNCTION CARD W/384K	$119
MINI I/O (PAR, SER, GAME, CLOCK)	$ 99
COLOR GRAPHICS CARD	$ 89
MONOGRAPHICS CARD W/PARALLEL PORT	$ 99
576K RAM CARD W/OK	$ 49
1200B INTERNAL MODEM	$159

$695

CPU — 88

- FULLY IBM PC/XT COMPATIBLE.
- 8088 CPU 4.7 MHz
- 8 EXPANSION SLOTS.
- 640K MEMORY ON BOARD.
- 2 360K HALF HIGHT FLOPPY DICK DRIVES
- 135W SWITCHING POWER SUPPLY.
- FLOPPY DISC CONTROLLER.
- STANDARD 5150™ KEYBOARD.
- MS™-DOS 2.11 LICENSED BY MICROSOFTR
- DETAILED OPERATION MANUAL.
- MICROSOFTR MACRO-ASSEMBLER INCLUDED.
- HARD DISK 10-33 MB OPTIONAL.
- ASSEMBLED AND TESTED IN U.S.A.

ORDERS ONLY/CALL TOLL FREE

1/800-662-6111 · 1/800-824-2936

INSIDE CALIFORNIA OUTSIDE CALIFORNIA

Computer Products United

1147 E. Broadway, #43
Glendale, CA 91205
Information Call:
(818) 796-8684

TERMS: We accept Cashier's Checks, Visa, Mastercard. Personal checks take 15 days to clear. Call for return authorization number on all warranty repairs. Any unauthorized return subject to a 10% restocking fee.

• IBM is a registered trademark of International Business Machines Corp. • Standard Computer is a trademark of Standard Computer Corp. • Microsoft and MS-DOS are registered trademarks of Microsoft Corp. • Taxan is a trademark of Taxan Corp. • Citizen is a trademark of Citizen America Corp. • Hayes is a trademark of Hayes Computer Corp.

master charge VISA

PC1
Your # 1 Choice

Your First System Consultant

30 Day Money Back Guarantee

Basic System
- 8088-2 CPU — Runs at 4.77 or 7.4 MHz
- 640K RAM
- 360K Half Height Floppy Drive w/Controller
- AT™ Style Keyboard
- 135 Watt Power Supply
- System Manual
- Runs All Major PC-DOS Software
- Full 18 Month Warranty
- MS-DOS 3.10

$659

Order It Today
Use It Tomorrow*

AT™ System
- 80286 Processor (Hardware switchable 6 / 8 MHz)
- 512K RAM (1024K Optional)
- 1.2 MB Floppy Disk Drive
- Floppy / Hard Disk Controller Card
- Clock/Calendar with Battery Backup
- AT™ Style Keyboard
- System Manual
- Runs All Major PC-DOS Software
- MS-DOS 3.10
- Full 18 Month Warranty

$1259

Monochrome System	**XT**	**$859**	**Color System**	**XT**	**$1059**	**EGA System**	**XT**	**$1339**
	AT	**$1459**	Basic System Plus...	**AT**	**$1659**	Basic System Plus...	**AT**	**$1939**
Basic System Plus...			•Color Graphics Adapter			•Enhanced Graphics Adapter		
•Monochrome Graphics Adapter			•13" RGB Color Monitor (640 x 200)			•13" High Res RGB Monitor (640 x 350)		
•12" TTL Monochrome Monitor								

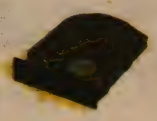
*Ask Us About "Order It Today, Use It Tomorrow" Special

California Residents — *We'll Pay Your Sales Tax!*

PC1
Your # 1 Choice

Your Upgrade Partner

Hard Disk Kits
20 MB $399

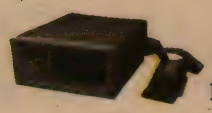


- Boots from Hard Disk
- Instruction Manual
- Cables & Mounting Hardware
- Hard Disk Controller

Hard Disk Card
$579

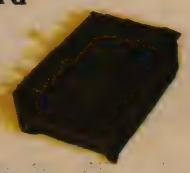
- IBM XT Compatible
- Easy Installation
- Formatted and Tested
- Boots From Hard Disk
- 80 Ms Average Access

Expansion Box
$150



- Room for 3 Half-Height Drives
- 120 Watt Power Supply
- 5 Slot Bus

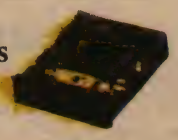
AT Type Hard Disk Drives
20 MB $549
30 MB $629
40 MB $759



- Boot from Hard Disk
- Instruction Manual
- Cables & Mounting Rails
- Works w/AT Hard Disk Controller

Host Bus Interface Cards w/Cable
$119

Floppy Disk Drives
$90



- Half-Height
- DS/DD — 360K
- Name Brands — TEAC, Panasonic, Mitsubishi, Sanyo, Etc.

Fast Tape Backup
20 MB $449 60 MB $659

- Easy Loading Tape Reels
- Responds to Standard DOS File Handling Commands
- Cables, Mounting Hardware and Tape Cartridge Included
- Software Included

"IBM's Brother" Monochrome Monitor
$119

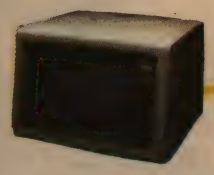
- IBM Lookalike
- 12" Screen
- Amber or Green
- Optional Swivel Stand

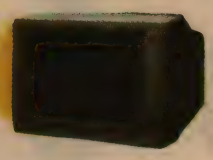
High Resolution RGB Color Monitor
$339

- 13" Screen
- 640 x 200 Resolution
- RGB — 16 Colors

EGA Compatible Color Monitor
$449

- .31 mm Dot Pitch
- 13" Screen
- 640 x 350 Resolution
- RGB — 16 Colors





Mono-Graphics Adapter
- Hercules™ Compatible
- Parallel Port

$99

Color Graphics Adapter
- 80 x 25 Character Text Mode
- 640 x 200 Dot Graphics Mode
- Fully IBM Compatible

$89

EGA Card
- EGA, CGA, MDA & Hercules™ Compatible
- Flicker-Free Display
- Fits Short Slot

$269

Turbo Speed Hard Disk Controller
$99

- 1:1 Interleave Lets Hard Drive Run at Full Speed
- Up To 6 Times Faster Than Standard Controller
- No Hardware Setup Required

Tiny Turbo Card
$475

- High-Speed Accelerator for PC and PC/XT
- Replaces 8088 with 80286
- Socket for 80287 on Board
- Short Card

Hayes Compatible Modem
$148

- 300 & 1200 BPS
- Short Card
- Fully Hayes Compatible

Enhanced Keyboard

- Separate Cursor & Numeric Pads
- Keys in Standard Locations
- LED Status Indicators
- Keytronic 5151 Compatible

$79

Citizen High Speed Dot Matrix Printer
MSP-20 (80 Column) $329
MSP-25 (136 Column) $489

- 200 CPS Draft / 50 CPS NLQ
- IBM, Epson Compatible
- Centronics Parallel Interface

AT Multifunction Card

$169

- Expandable to 3 MB — 1.5 MB on Board, 1.5 MB on Piggyback Board (0K Installed)
- Supports 64K & 256K RAM Chips
- Parallel, Serial and Game Ports

AT Mini I/O Card
$89

- Parallel, Serial and Game Ports

XT Multifunction Cards

$139

- 384K RAM
- Optional FDC
- Parallel, Serial and Game Ports
- RAM Disk & Printer Spooler Software

XT Mini I/O Card
$89

- Parallel, Serial and Game Ports

135 Watt Power Supply
$90

- XT Compatible
- UL Recognized (UR)
- Extra Power for Hard Drives

PC 1 Policy

The Price You See is The Price You Pay

No extra charges, no hidden charges, no surcharges.
We pay the freight. We pay any applicable sales tax.

We accept MasterCard and VISA (no surcharge), money order, chashier's check, personal check (please allow 10 days to clear), company / institutional PO's and wire transfers. We pay shipping (UPS ground — faster shipping available at additional charge) in continental US. We pay applicable sales tax.

Any item bought from PC 1 (including software if unopened) may be returned for a full refund within 30 days of the date it was shipped if for any reason you are not 100% satisfied. All PC 1 products carry PC 1's one year limited warranty; some products also carry manufacturer's warranty. Selected PC 1 products may carry additional warranties. Warranty policy requires that you submit proof of purchase and obtain an RMA number from us by telephone.

IBM, Hercules, Compaq, ATT, Panasonic, TEAC, Mitsubishi, ARC, Sanyo, Western Digital and Seagate are trademarks of their respective companies. MS-DOS is a trademark of Microsoft Corporation. IBM PC, IBM XT and IBM AT are trademarks of IBM Corporation.

Order Toll Free:
(800) 222-3978

In California: (213) 724-2781
Tech. Support: (213) 724-1684

5830 E. Washington Blvd.
City of Commerce, CA 90040

Simply put: THE™ highest quality and best value in computer products anywhere.

THE™ commitment to our customers is compatibility, quality, value, service and support

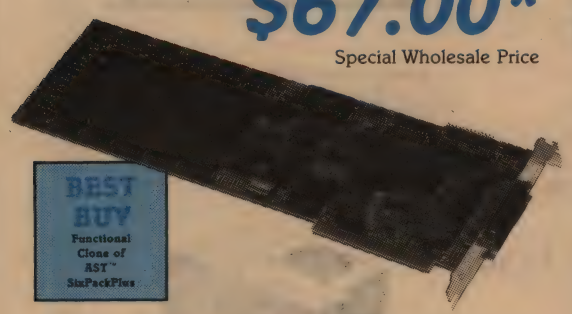
THE™ backs every product with a 45 DAY MONEY BACK GUARANTEE

and a FULL 1 YEAR PARTS AND LABOR WARRANTY

THE™ MULTI 384

This multi-function card features 0-384K memory, a parallel printer port, a serial port for communications, a clock/calendar with battery backup, and a software bonus that includes RAMdisk and other utilities. Retail Price $96.00*

$67.00*
Special Wholesale Price



THE™ COLOR CARD

100% compatible with the IBM™ colorcard with display modes of 80x25 alphanumeric and 320x200 graphic. Retail Price $80.00*

Special Wholesale Price **$60.00***

THE™ 576K MEMORY +

Supports 0-576K of available memory and is compatible with all IBM™ PC's. Retail Price $49.33*

Special Wholesale Price **$35.00***

THE™ PRINTERFACE

Supports all text and graphics features and is fully compatible with third party software. Retail Price $24.67*

Special Wholesale Price **$18.50***

THE™ MODEMS

100% Hayes™ compatible

THE™ 1200 COM EXTERNAL

This self-testing 1200 BPS modem comes with auto answer, auto dial, auto redial and a built-in speaker.

Retail Price $172.00*

Special Wholesale Price **$129.00***

VALUE ADDED

THE™ 1200 COM INTERNAL

Features auto answer, dial and redial, with a built-in speaker, RS 232-C serial port and PC Talk III. Retail Price $158.67*

Special Wholesale Price **$109.00***

THE™ 2400 COM EXTERNAL

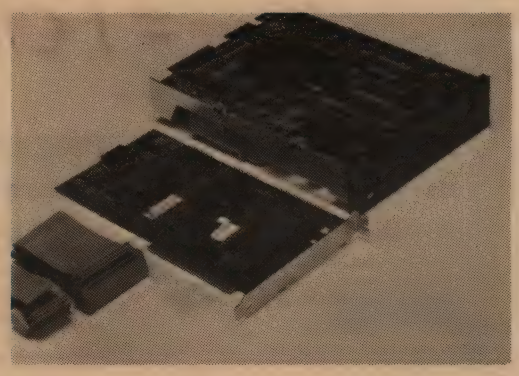
Eight times the speed of a 300 BPS unit makes this 2400 Baud modem truly affordable, and we've made it truly compatible. With auto answer, auto dial, auto redial, and a built-in speaker with volume control. Retail Price $369.33*

Special Wholesale Price **$259.00***

THE™ H720 MONO

This monochrome graphics card with printer port features 100% IBM™ and Hercules™ compatibility, at a fraction of their prices. Retail Price $97.33*

$73.00*
Special Wholesale Price



THE™ 20MB HARD DISK

Featuring a 20MB half height IBM™ PC compatible internal disk drive, controller card, connecting cables and installation manual. Retail Price $489.00*

Special Wholesale Price **$357.00***

THE™ MULTI I/O

Feature for feature, **THE**™ matches the AST™ I/O + and comes up a winner, with serial/parallel and game ports standard, (a second serial port optional), a clock/calendar, RAMdisk and print spooler. Retail Price $96.00*

Special Wholesale Price **$60.00***

THE™ 2MB RAM

This Intel™ spec board will give you up to 2MB's of expanded memory. Enough to run memory intensive software such as Framework, Symphony and Microsoft™ Windows. Retail Price $172.00*

Special Wholesale Price **$129.00***

THE™ EGA PLUS

With 256K standard this 100% IBM™ EGA and Hercules Graphics compatible card is ideal for high resolution graphics display of Microsoft™ Windows, Lotus™ and AutoCAD.™ Retail Price $283.75*

Special Wholesale Price **$220.00***

*All Items Subject to Availability—Prices Subject to Change

TM—Registered Trademarks of IBM/AST Research/Microsoft/Hercules/Hayes

Thompson, Harriman and Edwards Computer

THE™

Thompson, Harriman and Edwards Computer Products Company Ltd.

THE™ PC + COMPUTER

THE™ PC + is compatible with all business, professional and personal software written for the IBM™ PC. It will also enhance your productivity with its ability to switch to an 8 megahertz clock rate, enabling you to run your software twice as fast as the IBM™ PC.

THE™ PC + also comes standard with an "AT" style keyboard, correcting the inefficiencies found by IBM™ on their regular PC keyboard. 256K standard (640K optional) on the mother board will allow you to run memory intensive programs such as Lotus 1-2-3, DBase III and Framework without adding extra memory cards. Plenty of power, with a 135 Watt source and lots of room for expansion with 8 card slots is also standard. Base unit includes: 256K RAM, Computer with One 360K 5¼" Floppy Drive, Dual Turbo Clock Speed, 8 Expansion Slots, 135 Watt Power Supply, "AT" Style Keyboard, Full 1 Year Warranty and 45 Day Money Back Guarantee!

Retail Price $469.00*

Special Wholesale Price

$444.00*

(Monitor Not Included)

THE MOST INCREDIBLE LIMITED TIME OFFER IN COMPUTER HISTORY, FROM THE™ and PC NETWORK...

THE™ PC+

256K RAM, IBM™ PC compatible, 360K 5.25" Disk Drive, Turbo Speed, "AT" Style Keyboard

All THE™ products in this special sale are offered thru

PC Network

All prices in this ad are wholesale. PC Network Members pay wholesale — 8% and shipping

RONX

CALL TOLL FREE
(800) 621-SAVE
In Illinois (312) 280-0002

Special Wholesale Price

$444.00*

$469.00* for 640K System

Products Company Ltd.

Dealer Inquiries Call **THE™** at (312) 642-9626
319 West Ontario Street, Chicago, Illinois 60610

PC NETWORK

BUY HARDWARE AND SOFTWARE AT WHOLESALE +8%, AND GET 14-30 DAY SOFTWARE RENTALS†...

Listed below are just a few of the over 30,000 products available at our EVERYDAY LOW PRICES! *The Network* carries products for Apple, IBM, CP/M and most other popular computer families.

GAMES & EDUCATIONAL SOFTWARE FOR YOUR APPLE *II* & MACINTOSH

(Please add $1 shipping and handling for each title ordered from below.)

	Wholesale
Arrays *Home Accountant-Mac Only*	$42.00*
Bluechip *Baron/Millionaire/Tycoon*	23.66*
Broderbund *Lode Runner*	17.25*
Broderbund *Choplifter*	17.25*
Broderbund *Print Shop*	24.75*
Broderbund *Dazzle Draw*	30.25*
CBS *Murder by the Dozen*	20.97*
CBS *Goren Bridge Made Easy*	45.00*
Counterpoint *The News Room*	26.97*
Davidson *Speed Reader II*	31.00*
Davidson *Math Blaster*	21.50*
Davidson *Word Attack!*	21.50*
1st Byte *Smooth Talker-Mac Only*	44.00*
Hayden *DaVinci-House/Interiors/Landscapes*	23.00*
Hayden *Sargon III*	24.75*
Infocom *Deadline or Suspended*	24.00*
Infocom *Enchanter, Planetfall, Cutthroats, Witness or Zork I*	20.00*
Infocom *Hitchhiker's Guide or Seastalker*	20.00*
Infocom *Suspect, Sorcerer or Infidel*	22.00*
Infocom *Zork II or III*	21.75*
Layered *Front Desk-Mac Only*	65.00*
Miles Computing *Mac Attack-Mac Only*	20.50*
Palantir *Mac Type-Mac Only*	26.37*
Penguin *Graphics Magician*	$28.97*
Penguin *Pensate or Xyphus*	17.70*
Penguin *Transylvania-Mac Only*	20.00*
Professional Software *Trivia Fever*	19.00*
Pryority Software *Forbidden Quest*	21.00*
Scarborough *Master Type*	19.75*
Scarborough *Run for the Money*	26.00*
Simon & Schuster *Typing Tutor III*	28.25*
Sir-Tech *Wizardry*	26.97*
Sir-Tech *Knight of Diamonds*	18.97*
Sir-Tech *Rescue Raiders*	18.97*
Sublogic *Night Mission Pinball*	20.00*
▶**Spinnaker** *Alphabet Zoo, Face Maker, Kinder Comp, Hey Diddle Diddle, Rhymes & Riddles, Story Machine*	15.97*
▶**Spinnaker** *The Most Amazing Thing*	20.77*
▶**Spinnaker** *Delta Drawing*	24.97*
T/Maker *Click Art-Mac Only*	25.00*
Warner *Desk Organizer*	59.90*
Videx *Fun Pack-Mac Only*	19.77*
Videx *Mac Checkers & Reversal*	25.17*
Videx *Mac Vegas-Mac Only*	31.00*
Virtual Combinatics *Micro Cookbook*	21.00*

BUSINESS SOFTWARE FOR YOUR APPLE *II* & MACINTOSH

(Please add $2.50 shipping and handling for each title ordered from below.)

▶**Apple** *Apple Works*	$160.00*
Assimilation Process *Mac Memory Disk*	17.75*
Beagle Brothers *Macro Works*	21.00*
Borland International *Reflex/Mac-Recreation*	59.00*
Borland International *Turbo Pascal*	37.50*
Borland International *SideKick for Mac*	49.85*
BPI *GL, AP, AR, PR or INV*	209.00*
Broderbund *Bank Street Writer*	35.25*
Central Point *Copy II Plus or Copy II Mac*	16.25*
Epyx *Winter Games*	20.00*
Funk Software *Sideways*	26.50*
Funsoft *Macasm*	60.00*
Haba *Habadex*	40.00*
Harvard *Mac Manager*	29.95*
Human Edge *Mind Prober*	21.00*
▶**Human Edge** *Sales Edge*	21.00*
Human Edge *Communication Edge*	98.00*
▶**Living Videotext** *ThinkTank-Mac Too!*	65.00*
Main Street *Filer-Mac Only*	$67.00*
MECA *Managing Your Money*	99.00*
▶**Microsoft** *Word for Macintosh*	97.50*
▶**Microsoft** *File for Macintosh*	97.50*
▶**Microsoft** *Multiplan for Macintosh*	97.50*
Microsoft *Basic for Macintosh*	75.00*
Microsoft *Chart for Macintosh*	62.50*
Monogram *Dollars & Sense for Apple II*	71.99*
Monogram *Dollars & Sense for Macintosh*	63.00*
Odesta *Helix for Macintosh Reg's 512K*	195.00*
Provue *Overvue-Mac Only*	130.00*
Sensible Software *Sensible Speller IV*	67.50*
Softcraft *Fancy Fonts*	125.00*
Softech Microsystems *UCSD Pascal*	37.00*
Software Publishing *PFS: File, Write, or Graph*	61.00*
Stoneware *DB Master-Mac Too!*	90.00*
Telos *Filevision for Mac*	85.00*

HARDWARE FOR YOUR APPLE *II* & MACINTOSH

(Please add shipping and handling charges found in italics next to price.)

DISK DRIVES

	Wholesale	
Apple *All Models*	CALL	
Apple *MAC 800KB External Drive*	$349.95*	(7.50)
▶**Haba** *800KB Double Sided Mac Drive*	215.00*	(4.64)
IOmega *Macnoulli 5MB Removable Drive for Macintosh*	999.00*	(21.58)
IOmega *20MB Macnoulli*	2,050.00*	(44.28)
Micro Sci *A2 143KB Drive Just like Apple's Own*	150.00*	(5.00)
Micro Sci *Floppy Controller*	45.00*	(2.50)
▶**Paradise** *Mac 10MB Hard Drive*	525.00*	(16.20)
▶**Paradise** *Mac 20MB Hard Drive*	745.00*	(20.25)
▶**PC Network** *140K External Drive for Apple IIc*	95.00*	(2.50)
PC Network *140K Full Height Drive for Apple IIe*	95.00*	(2.50)
Tecmar *5MB Removable Drive/MAC*	999.00*	(21.58)
Tecmar *10 MB MAC Drive*	999.00*	(21.58)

BOARDS AND BUFFERS

AST™ *Multi/O—2 Serial/Clock*	$155.00*	(2.50)
Microsoft *Premium Softcard IIe*	243.67*	(2.50)
Microtek *Dumpling/GX*	55.00*	(2.50)
Orange Micro *Grappler +*	66.00*	(2.50)
Orange Micro *Serial Grappler*	66.00*	(2.50)
PC Network *Z80 Card*	35.00*	(2.50)
Quadram *APIC/G Graphics Interface*	62.00*	(2.50)
Quadram *E RAM-80*	88.00*	(2.50)
Quadram *Multicore—1 Parallel 1 Serial/Clock Expandable to 256K*	140.00*	(2.50)
Thunderware *Thunderclock*	104.00*	(2.50)
Titan Technologies *Accelerator IIe*	207.35*	(4.47)

MODEMS

	Wholesale	
Hayes *Micromodem IIe w/Smartcom*	$125.00*	(2.50)
Novation *Apple Cat II*	174.45*	(3.50)
Prometheus *1200 A Low Cost 1200 Baud Internal Modem for Apple II.*	225.00*	(4.86)
Prometheus *Promodem 1200*	253.00*	(5.46)
Prentice *Popcom, MacPack, 1200 Baud Modem, Cable, Straightalk*	219.00*	(2.50)

ACCESSORIES

Apple *Macintosh Carrying Case*	$69.00*	(1.49)
Apple *Macintosh Security Kit*	29.00*	(1.50)
Curtis *Ruby Surge Protector*	39.00*	(1.50)
Hayes *Mach III Joystick w/Fire Button for IIe*	26.50*	(1.50)
Kensington *Disk Case*	20.00*	(1.50)
Kensington *Dust Cover for MAC or ImageWriter*	6.00*	(1.50)
Kensington *Starter Pack*	44.50*	(3.00)
Kensington *Surge Protector*	29.50*	(2.50)
Kensington *Swivel*	21.00*	(2.50)
Kensington *System Saver Fan*	56.97*	(1.50)
▶**Koala** *MacVision*	150.00*	(3.00)
Koala *Koalapad Touch Tablet*	78.00*	(1.50)
PC Network *Cooling Fan with Surge Protector & Dual Outlets*	25.00*	(2.50)
PC Network *SSDD Diskettes (Box of 10)*	6.95*	(1.00)
PC Network *Macintosh Diskettes Includes Free Flip & File Case These Diskettes are Guaranteed for Life! No Generics!*	12.50*	(1.50)
Sony *Mac Diskettes (Box of 10)*	19.00*	(1.50)
Thunderware *Thunderscan*	155.00*	(3.25)

GAMES & EDUCATIONAL SOFTWARE FOR YOUR IBM

(Please add $1 shipping and handling for each title ordered from below.)

	Wholesale
ATI *Intro to PC DOS Vol. I & II*	$23.00*
ATI *Intro to BASIC*	23.00*
Bluechip *Millionaire/Oil Baron or Tycoon*	28.99*
Broderbund *Ancient Art of War*	22.75*
Broderbund *Lode Runner*	17.25*
CBS *Goren Bridge Made Easy*	40.00*
CBS *Mastering the SAT*	50.00*
CDEX *Training for Wordstar*	37.25*
Comprehensive *Intro to Personal Computing*	32.00*
Davidson *Math Blaster, Word Attack!*	21.50*
Davidson *Speed Reader II*	31.00*
Hayden *Sargon III*	26.00*
Individual *Professor DOS*	29.75*
Individual *The Instructor*	24.50*
▶**Infocom** *Zork I or Witness*	20.00*
▶**Infocom** *Deadline or Suspended*	$24.00*
Microsoft *Flight Simulator*	27.00*
Mouse Systems *PC Paint—Turn your PC Into A Color Macintosh!*	59.95*
Pinpoint Publishing *Micro Cookbook*	21.00*
Scarborough *Master Type*	19.75*
Sierra On-Line *King's Quest II*	24.75*
Spectrum Holobyte *GATO*	18.00*
▶**Spinnaker** *Alphabet Zoo, Kinder Comp. Story Machine, Face Maker, Hey Diddle Diddle, Rhymes & Riddles*	15.97*
▶**Spinnaker** *Delta Drawing*	20.75*
▶**Spinnaker** *Most Amazing Thing*	20.77*
Sublogic *Jet*	27.50*
Sublogic *Night Mission Pinball*	19.25*

BUSINESS SOFTWARE FOR YOUR IBM

(Please add $2.50 shipping and handling for each title ordered from below.)

▶**Ashton-Tate** *DBase III+*	$365.00*
▶**Ashton-Tate** *Framework II*	365.00*
Borland *Turbo Pascal*	35.00*
Borland *SideKick (Protected)*	26.00*
Borland *Turbo Pascal 8087*	49.75*
Borland *SuperKey*	34.50*
BPI *G/L, A/R or A/P*	305.00*
BPI *Personal Accounting*	43.75*
Breakthrough *Timeline*	203.00*
▶**Central Point** *Copy II PC*	20.00*
Computer Associates *Supercalc 4*	239.95*
Conceptual Instruments *Desk Organizer*	47.00*
Digital Research *DR Logo*	75.00*
Digital Research *Gem Desktop*	26.00*
Digital Research *Gem Draw*	126.00*
Enertronics *Energraphics*	147.00*
Funk Software *Sideways*	32.00*
▶**Harvard** *Harvard Project Manager*	190.00*
Harvard *Total Project Manager*	250.00*
▶**Hayes** *Smartcom II—New VT100 Emulator*	78.00*
▶**Human Edge** *The Management Edge*	24.00*
▶**Human Edge** *Mind Prober*	24.00*
Infocom *Cornerstone*	70.50*
Lifetree *Volkswriter III*	126.00*
▶**Lotus Development** *Lotus 1-2-3 Ver. 2.01*	280.00*
▶**Lotus Development** *Symphony*	385.00*
MDBS *Knowledgeman/2*	$229.00*
Meca *Managing Your Money*	87.50*
MicroPro *Wordstar 2000*	210.00*
MicroPro *Wordstar 2000+*	259.00*
MicroRim *Clout*	110.00*
MicroRim *RBase 5000*	215.00*
Microsoft *C Complier*	230.00*
Microsoft *Word—Latest Version 3.0*	229.00*
Microsoft *Multiplan*	98.00*
Microsoft *Mouse*	107.00*
Monogram *Dollars & Sense*	87.00*
▶**Multimate** *Multimate (Latest Version)*	180.00*
Norton *Norton Utilities 3.1*	43.00*
Open Systems *P/O Sales A/R INV G/L A/P Ver. 3X*	ea.395.00*
Power Base *Power Base*	200.00*
Real World *G/L A/P A/R or OE/INV*	ea.350.00*
Rosesoft *ProKey Version 3*	65.00*
Ryan McFarland *RM COBOL (Dev. System)*	520.00*
▶**Samna** *Samna III Word Processor*	236.00*
▶**Samna** *Word +*	270.00*
▶**Satelite Software** *Word Perfect*	180.00*
Softcraft *Fancy Fonts*	125.00*
Software Publishing *PFS:File, Write,Graph*	68.00*
Software Publishing *PFS:Report*	64.00*
Migent *Ability*	55.00*

HARDWARE FOR YOUR IBM

(Please add shipping and handling charges found in italics next to price.)

DISK DRIVES

	Wholesale	
IOmega *Bernoulli Box Dual 10MB Drives*	$1,710.00*	(36.94)
PC Network *AT 42MB Internal HD 35MS Access Time—Comes Complete*	1,050.00*	(22.68)
PC Network *20MB Tape Backup Half Height Internal w/Controller*	395.00*	(8.94)
▶**PC Network** *10MB INTERNAL 1/2 Height Autoboot Drive: New lower price*	299.00*	(6.46)
PC Network *10MB Tape Backup Same unit used in Compaq's DeskPro!*	340.00*	(8.94)
THE *20MB INTERNAL 1/2 Height Hard Drive by Seagate or Microscience*	357.00*	(7.93)
▶**PC Network** *Half Height DS/DD Drives*	75.00*	(1.68)
▶**Tandon** *TM100-2FullDS/DD Drives*	120.00*	(2.59)

MULTIFUNCTION CARDS

Apparat *AT Ram Expansion Card*	$139.00*	(2.50)
AST *SixPakPremium™2MB/*	315.00*	(2.50)
▶**AST** *SixPakPlus™with 64K*	139.00*	(2.50)
AST™ *I/O Plus II™*	120.00*	(2.50)
AST™ *Advantage for AT™*	325.00*	(2.50)
▶**Orchid** *Conquest w/0K 2MB EMS*	220.00*	(2.50)
Quadram *Gold Card 384K Multifunction/Color Card w/0K*	340.00*	(2.50)
Tecmar *Captain Multi Card w/0K*	109.00*	(2.50)
▶**THE™576K Plus** *Memory Board/0K*	35.00*	(2.50)
▶**THE™Multi 384** *A functional clone of AST's™SixPakPlus.™ Includes up to 384K of expansion memory, 1 serial, 1 parallel, 1 game port, a clock/calendar and 3 software standard.*	67.00*	(2.50)
▶**THE™Multi I/O** *I/O Plus II Clone Ser/Par/Game/Clock standard*	60.00*	(2.50)

MODEMS

	Wholesale	
Hayes *Smartmodem 1200B*	315.00*	(2.50)
Hayes *Smartmodem 1200B Alone with New Smartcom II/VT100 Emulator*	265.00*	(2.50)
Prometheus *Promodem 1200B*	225.00*	(2.50)
Quadram *Quadmodem II 1200 Baud Hall Card w/Crosstalk XVI*	275.00*	(2.50)
THE™ *Internal 1200 BPS Modem*	109.00*	(2.50)

VIDEO CARDS

Hercules *Color Card w/Parallel Port*	$126.00*	(2.50)
▶**Hercules** *Mono Graphics Card*	162.00*	(2.50)
Paradise *Modular Graphics Card*	219.00*	(2.50)
Persyst *BOB Card High Res Color*	299.00*	(2.50)
Quadram *Quad EGA + Enhanced Graphics Adapter*	323.00*	(2.50)
▶**THE™H720** *Mono Card Clone 100% Hercules Compatible!*	73.00*	(2.50)
▶**THE™ColorCard** *100% IBM Compatible*	60.00*	(2.50)
▶**THE™Plus** *EGA Clone*	220.00*	(2.50)

ACCESSORIES

▶**Brand Name DS/DD Diskettes** *Guaranteed for Life! Not Generic!*	$ 7.95*	(1.00)
▶**DS/DD Bulk Rate Special** *Packaged in 50 with sleeves and labels Guaranteed for Life!*	.54*ea.	
▶**PC Network** *Replacement 130 Watt IBM-PC Power Supply—Gives your PC the same Capacity as an XT. Good for add in Tape Drives (without the need for a piggyback unit) and large capacity disk drives.*	79.00*	(5.00)
SMA *PC Documate: Keyboard Templates for Lotus/DBase/Multimate and others*	9.99*	(1.00)

MEMORY CHIPS

(All Memory Chips Guaranteed for Life!)

	Wholesale	
▶**64K Memory Upgrade Kits** *(9 Chips) Quantity Discounts Available!*	$9.00*	(1.00)
▶**64K Dynamic Ram Chips** *(Each)*	1.00*	(1.00)
▶**256K Dynamic Ram Chips** *(Each)*	2.90*	(1.00)
▶**128K IBM AT Mother Board Chips**	3.50*	(1.00)

EXTERNAL MODEMS

Anchor *Signalman Express*	$205.00*	(5.00)
Hayes *Smartmodem 1200*	340.00*	(5.00)
▶**Hayes** *Smartmodem 2400*	525.00*	(5.00)
Prometheus *Promodem 1200*	247.00*	(6.00)
ALL THE™MODEMS ARE 100% HAYES COMPATIBLE		
THE™ *1200 COM External Modem*	129.00*	(2.50)
THE™ *2400 COM External Modem*	259.00*	(3.00)
▶**U.S. Robotics** *Courier 2400BPS*	345.00*	(5.00)
▶**U.S. Robotics** *Password*	172.00*	(4.00)

MONITORS

	Wholesale	
Amdek *Video 300G Green*	$110.00*	(3.00)
Amdek *Video 300A Amber*	120.00*	(3.00)
Amdek *Video 310A IBM Type Amber*	130.00*	(3.00)
Amdek *Color 600 High Res RGB*	365.00*	(7.88)
Amdek *Color722 Enhanced Graphics*	424.00*	(9.16)
▶**Magnavox** *12" TTL IBM Type Monitor*	79.00*	(5.00)
NEC *JC-1401 Multisync RGB*	480.00*	(10.37)
Princeton *HX-12 RGB Monitor*	369.00*	(7.97)
Princeton *Max 12e Works with Color or Mono Card*	138.00*	(5.00)
Quadram *Quadchrome II NEW! 60 x 200 RGB w/14" Screen/Black Phosphor Mask/IBM Case*	289.00*	(6.24)
Taxan *121 12" TTL Green Monitor*	120.00*	(2.59)
Taxan *630 High Res RGB Monitor*	383.00*	(8.27)
Taxan *640 Highest Res (720 x400) Currently Available—Works with Persyst BOB Card*	439.00*	(10.69)
Zenith *ZVM-1230A Green High Res/Non Glare*	91.00*	(2.50)

COMPLETE SYSTEMS

Apple *Macintosh Base System*	CALL	
AT&T *6330PC CPU 128K 2 Floppy/1 Serial/1 Parallel/Green Monitor*	$1,775.00*	(38.34)
AT&T *7300 Unix PC 10MB Hard Disk/1 Floppy/512K*	3,699.00*	(79.90)
COMPAQ *DeskPro w/640K 1 Floppy/20MB Hard Disk*	$1,910.00*	(41.26)
▶**COMPAQ** *Hard Disk Portable 20MB Hard Disk/1 Floppy*	$1,910.00*	(41.26)
▶**IBM** *PC Base System 256K*	1,025.00*	(22.14)
▶**IBM** *PC Professional Hard Disk*	1,392.00*	(30.07)
IBM *PC/AT Base System 1.2MB Floppy w/256K*	2,875.00*	(62.10)
IBM *AT Professional System 1.2MB Floppy/20MB Hard Disk/1 Ser/Par/512K*	CALL	

PRINTERS

▶**Citizen** *MSP-10 NEW! 160CPS/80COL/Fric + Trac*	$225.00*	(4.68)
▶**Citizen** *MSP-15 NEW! 160CPS/132COL/Fric + Trac*	340.00*	(7.34)
▶**Citizen** *MSP-20 NEW! 200CPS/80COL/Fric + Trac*	299.00*	(6.46)
▶**Citizen** *MSP-25 NEW! 200CPS/132COL/Fric + Trac*	435.00*	(9.40)
▶**Citizen** *Premiere 35 NEW! 35 CPS Daisywheel/132COL/Fric + Trac*	420.00*	(9.07)
Citizen *120-D 120/125CPS 10" Trac*	169.00*	(3.63)
▶**Epson** *LX-80 100CPS/80COL/LQ*	225.00*	(4.86)
▶**Epson** *FX-85*	345.00*	(7.45)
▶**Epson** *FX-286 NEW!*	505.00*	(10.91)
Epson *LQ 1000 NEW! 180CPS/60CPS NLQ*	CALL	
Epson *SQ 1000 Inkjet Printer*	1,453.00*	(31.86)
Epson *DX 35 35CPS/LQ Model*	590.00*	(12.74)
▶**NEC** *2030 20CPS LQ Parallel*	605.00*	(13.05)
▶**NEC** *2050 20CPS Letter Quality*	570.00*	(13.00)
▶**NEC** *3530 33CPS/LQ Parallel*	$888.00*	(19.18)
▶**NEC** *3550 33CPS/LQ*	690.00*	(14.90)
Okidata *ML 182 NEW! 120CPS/LQ Model Fric/IBM Graphics + More*	188.00*	(4.06)
Okidata *ML 192 Sleek Design 160CPS/LQ Model/IBM Graphics/Fric*	299.00*	(6.46)
Okidata *Color 20 80/CPS+ LQ Model/IBM Graphics + More (Requires Interface)*	129.00*	(2.79)
Okidata *IBM Interface for Okimate Color 20*	69.00*	(1.50)
Okidata *ML84P 200CPS*	599.00*	(12.94)
Okidata *ML 193P 160CPS Wide Platen*	CALL	
Okidata *2410P Pacemark 350CPS*	CALL	
Qume *Sprint 1140 40CPS LQ*	1,155.00*	(24.00)
Star Micronics *Power Type 18CPS Letter Quality*	300.00*	(6.48)
Toshiba *P1340 80COL/144CPS*	430.00*	(9.29)
Toshiba *P341 210CPS/132COL*	714.00*	(15.42)
Toshiba *P351 288CPS/132COL*	974.00*	(21.03)

TERMS & CONDITIONS

*PC NETWORK—Members pay just 8% above the wholesale price, plus shipping. All prices reflect a 3% cash discount. Minimum shipping $2.50 per order. International orders call for shipping & handling charges. Money Orders, personal and company checks please allow 10 working days to clear. All prices subject to change without notice.

†RENT BEFORE YOU BUY—Members are eligible to join the NETWORK's Business and Game software Rental Libraries and evaluate products for a full 14 (Regular) or 30 (VIP) days to see if it meets your needs. And The NETWORK's rental charges are far less than other software rental services—Just 20% OF THE MEMBER WHOLESALE PRICE. **Rental titles available in IBM/Apple/MAC and CP/M Formats.** Hardware prices highlited by ▶ reflect recent major price reductions.

COMPLETE SYSTEMS

(Optional local warranty service available in most major metro areas)

PC NETWORK

IBM PC BASE SYSTEM

IBM PC w/256K
Floppy Drive Controller
2 Double Sided Double Density Disk Drives
Mix and Match with your Favorite Monitor and Printer!

$1,025.00*

CUSTOM CONFIGURATIONS WELCOME

IBM PC HARD DISK SYSTEM

IBM PC w/256K
Floppy Drive Controller
1 Double Sided Double Density Disk Drive
Half Height Hard Disk

w/20MB **$1,337.00***

CALL FOR LATEST IBM ANNOUNCEMENTS

PORTABLE HARD DISK SYSTEM

w256K/1 Floppy/20MB Hard Disk

$1,910.00*

COMPAQ™

DESKPRO SYSTEM

256K CPU/1 Floppy/30MB Hard Disk

$1,999.00* w/30MB
$1,910.00* w/20MB

APPLE *IIc*

APPLE *IIe*

MACINTOSH SYSTEMS

Prices Too Low To Print!

64K IBM PC MEMORY EXPANSION KITS

Quantity Discounts Available.
Guaranteed for Life!

Set of 9 Chips **$7.75***

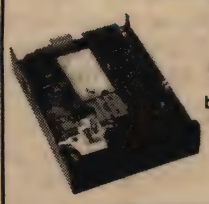
DISKETTES

Guaranteed for Life!

Brand name diskettes available in boxes of 10 or in bulk packs of 50

5¼" DS/DD	5¼" SS/DD	3½" SS/DD
$7.95* Bx. 10	$6.95* Bx. 10	Bx. 10 $15.95*
Bx. 50 ea. .54*	Bx. 50 ea. .47*	Free Flip & File Case

1/2 HEIGHT DS/DD DISK DRIVES



The Network buys direct and makes fantastic deals with manufacturers like MPI/Tandon/CDC/Shugart/Qume/TEAC and others to bring you fantastic prices on Name Brand drives for your PC/AT/XT/or Compatible.

$75.00*

Quantity Discounts Available

INTERNAL PC HARD DISK

Low Power/Automatic Boot. Works on standard PC's and Compatibles. Includes drive/controller/cables/mounting hardware and instructions.
Full one year warranty!

10MB **$299.00***
20MB **$357.00***

Quantity Discounts Available

Lotus 1-2-3™

$280.00*

WordPerfect

$180.00* ea.

MultiMate™

***Members pay 8% above this wholesale price plus shipping.**

CALL TOLL FREE **1-800-621-S-A-V-E** (orders and memberships)
In Illinois call (312) 280-0002 Validation code: R0X6
Customer Service and Order Status (312) 280-1567

TM & R—Registered trademarks of IBM/COMPAQ/APPLE/AST™ Research/LOTUS/MultiMate Int./IOMEGA.

SEE WHY OVER 150,000 HAVE JOINED MAKING US THE NATION'S #1 SOURCE FOR EVERYTHING IN COMPUTING

- ***Our 600 Page Wholesale Catalog***
  Over 30,000 products priced at Wholesale + 8%. Anything you will ever need at a Consistent low price...
- ***Quarterly Catalog Updates***
  Your Catalog is never obsolete! Keep on top of the newest products and latest price changes.
- ***The Printout***
  Our newsletter gives you fantastic specials alog with unbiased analysis of new products and industry trends.
- ***10 Day Returns on any Hardware!!***
  If you don't like any hardware product—for any reason —return it for a refund.
- ***1000 + Title Rental Library***
  14 to 30 day rentals on over 1000 different titles. Try before you buy!!
- ***Size, Strength and Stability***
  The Network has over 150 employees. 45.00 square feet of office and warehouse space, inventory valued in excess of $15,000,000 and is ranked the largest computer product supplier in the nation! Our commitment is to serve our customers and our 90% repeat business rate is proof!!
- ***OnLine™ Bulletin Board***
  Download "Freeware" from the nation's largest single concentration of Public Domain software available! Get tied into the nation's largest technical information network! Place orders, get tech support or contact customer service from the Network's OnLine,™ not just a bulletin board but a complete customer information network.

CALL TOLL FREE 1-800-621-S-A-V-E

(Orders—Membership and Advice!)
In Illinois call (312) 280-0002
Your Membership Validation Number R0X6

You can validate your membership number and, if you wish, place your first money-saving order over the phone by using your VISA, MASTERCARD or AMERICAN EXPRESS. **Our knowledgeable sales consultants are on duty Mon.-Fri. 8:00 AM to 7:00 PM, SAT. 9:00 AM to 5:00 PM CST.**

PERSONAL COMPUTER NETWORK
320 West Ohio
Chicago, Illinois 60610

Call now...Join the PC NETWORK and start saving today!
Customer Service and Order Status (312) 280-1567
8:30 AM to 4:30 PM, Mon.-Fri. CST

PC NETWORK • MEMBERSHIP APPLICATION

YES! Please enroll me as a member in the PC NETWORK™ and rush my catalog featuring thousands of computer products, all at just 8% above DEALER WHOLESALE PRICES. I will also periodically receive "THE PRINTOUT", a special up-date on merchandise at prices BELOW even those in my wholesale catalog, and all the other exclusive, money-saving services available to Members. **0X6** ☐

I am under no obligation to buy anything. My complete satisfaction is guaranteed. Please check (✓) all boxes that apply:

Basic Membership With 14 Days Rental
- ☐ One-year membership for $8
- ☐ Two-year membership for $15 (SAVE $1)
- ☐ Business Software Rental Library for $25 add'l. per year–with 14 day rentals
- ☐ Games Software Rental Library for $10 add'l. per year

Special V.I.P. Membership* With 30 Days Rental.
- ☐ One-year membership for $15
- ☐ Two-year membership for $25 (SAVE $5)
- ☐ BOTH Business and Game Software Rental Libraries for $30 add'l. per year—with 30 day rentals

*VIP members receive advance notice on limited quantity merchandise specials

☐ Bill my credit card: ☐ VISA ☐ MasterCard ☐ American Express

Account Number: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Exp. _____ mo. year

☐ Check or money order enclosed for $ _____

Name _____

Address _____ Apt. No. _____

City _____ State _____ Zip _____

Telephone ( ) _____

My computer(s) is: ☐ IBM PC ☐ IBM-XT ☐ IBM-AT ☐ Apple II ☐ Macintosh ☐ Other _____

Signature _____
(Signature required to validate membership)

Copyright © 1985, PC NETWORK, INC.

Echo Off Writing Batch Files

by Hal Nieburg

Let us suppose:

—Your children have difficulty learning all the commands for loading various game disks. You write short AUTOEXEC.BAT files on each disk. When the children insert a disk in the drive, the game loads itself.

—You wish to be sure that users read a message before they begin using a program. You write a batch file which displays the message as the program is being loaded.

—You want a short reminder of commands for a program. You write a batch file which displays them as the program is loaded, or you make them accessible from DOS at will with a simple command.

—You prepare a disk of various materials for the use of office colleagues or students; and you need to provide users with a table of contents and instructions for accessing the materials. Or you might want a series of programs to load automatically as each preceeding one is exited. These are excellent uses for AUTOEXEC.BAT files.

—You want to set up for a work session by loading SideKick to memory, by setting the color attributes of the screen, by creating a RAM disk. You write an AUTOEXEC file to do all these things automatically each time the computer is turned on. This is an enormous saving of time and effort.

—You would like to make it easier for someone to transfer system (or other) files to a program disk. You write an INSTALL.BAT file which tells them when to insert and change disks, and otherwise does all the work for them. You can do the same thing for the setup of master distribution disk.

—You want your students to read some documents on a computer without making any changes. A batch file combined with the MORE command will display the documents in order and enable the reader to scroll through them at his/her own speed.

—You prepare a computer presentation or demo. You write a batch file so that the program will run itself over and over again.

—You wish to print a series of documents without the necessity to enter a command for each. You write a batch file, and go out for beer and bratwurst.

—You want a file to be deleted after the user reads it. A batch file can do this readily.

—You want the utility for graphic "screen dumps" to be in memory "just in case" you should need it later. This is accomplished by including the GRAPHICS command (from DOS) in the AUTOEXEC batch file, so every time the computer be booted, the routine automatically becomes resident in memory.

The .BAT Extension

Many IBM-PC (or MS/DOS) operators neglect a very powerful facility that they already possess. It comes with the DOS package. And it can do many kinds of work for all levels of users. The DOS Manual explains the use of batch command files, along with much else, but some people find it forbidding. The symbols and explanations, they think, are only clear to people who already know what the manual is trying to say. In this article, we will try to explain batch files and their uses so that any person of average computer literacy can understand them.

There are three kinds of runtime files in DOS, identified by the extensions .EXE, .COM, and .BAT. They stand for, respectively, execute, command, and batch. Whenever the name that preceeds the extension is typed in at a DOS prompt, the computer will swing into some kind of action.

Batch files are present on virtually all commercial program disks. Often they are invisible to the user, except that they are on the directory, and, when they are invoked, their presence is revealed by the mysterious words ECHO OFF on the screen. These words merely instruct the batch file to execute without echoing any of its steps to the screen. When the first line of the file omits those words, the user sees each command as it executes.

This utility actually includes a stripped down programming language, so that conditional IF—THEN commands, LOOPS, GOTOs, and other refinements are implemented. But the mildly technical person need not concern himself with that; most of the power of batch files can be utilized without getting beyond a few simple routines. Down the road, the user may feel challenged to go deeper.

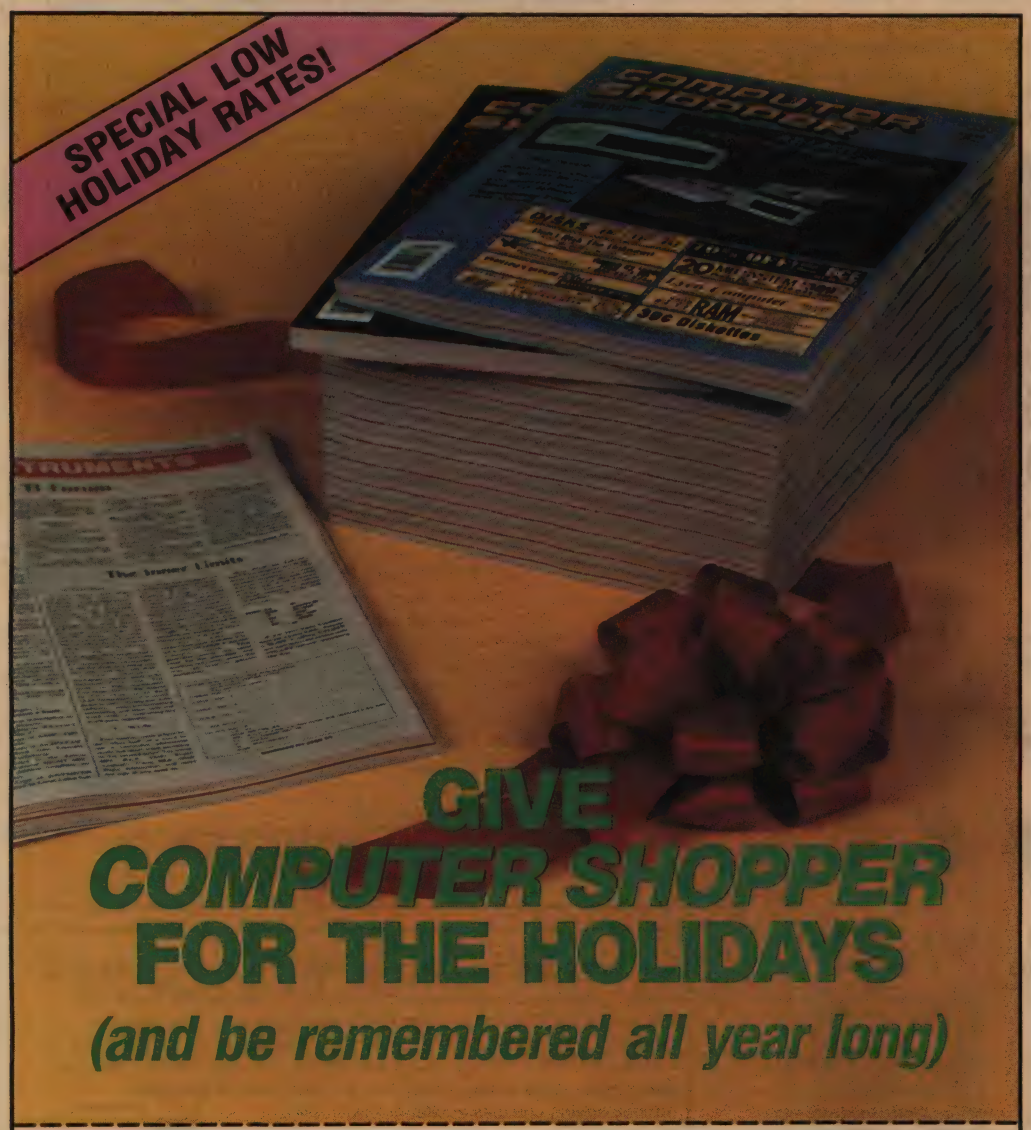
A batch file operates by executing a series of commands a-line-at-a-time. The syntax of the commands is the same as any commands given at a DOS prompt. Any DOS commands can be used, TYPE, DIR, log to new drive, COPY, CLS, etc. Any program commands can be used, including those of commercial software, BASIC and BASICA, etc.

In addition, there are a number of special batch commands, among the more useful are: PAUSE will stop the execution, until the user "strikes any key"; ECHO ON/OFF will write some to the screen or not; REM will place an explanatory note in the file, displaying it to the screen during execution or not, as desired.

Here is an example of a short batch file, with explanation in brackets:

```
echo off   [do not echo commands to
           screen]
chkdsk b:  [show stats of disk in drive
           B]
dir b:     [show directory of B]
pause      (stop execution until notified]
b:         [log to drive B]
gato       [run the Gato submarine
           game]
```

continued on page 169



Special Holiday Savings Gift Form

1st Gift **$18.00**

Each additional 1-year gift **$14.97**
(or your own subscription)

Give *COMPUTER SHOPPER* for the holidays! We make it easy to order. You can give now, but pay after January 1, 1987. We'll even send you gift cards to announce your thoughtfulness.

For faster service call our Toll-Free Holiday Hotline 1-800-327-9926 (In FL 305-269-3211) Mon-Fri 8-5 EST.

1st Gift Subscription to:
☐ New ☐ Renewal
Name _____
Address _____
City _____ ST____ Zip_____

2nd Gift Subscription to:
☐ New ☐ Renewal
Name _____
Address _____
City _____ ST____ Zip_____

Gift Subscription(s) From:
Name _____
Address _____
City _____ ST____ Zip_____

☐ In Addition: Enter my own 1 year subscription for only $14.97
☐ Payment enclosed for ____ subscription(s)
☐ Bill me after January 1, 1987
☐ Charge my VISA/MC for ____ subscription(s)
Acct. # _____ Exp. Date_____
Signature _____

COMPUTER SHOPPER®
407 S. Washington Ave. Titusville, FL 32796

Prices valid in USA only. Canadian and foreign rates available upon request. Offer expires Jan. 31, 1987.

X303

VIDEO ALSO

Electrified

WE WILL TRY TO BEAT ANY PRICE ON ANYTHING FROM ANYWHERE!!!
WE WILL TRY TO BEAT ANY PRICE ON ANYTHING FROM ANYWHERE!!!

AUDIO ALSO

A TRULY PROFESSIONAL STAFF WITH A COMMITMENT TO SERVICE!!!

SOFTWARE SUPER SALE!!

BRAND NEW FACTORY SEALED SOFTWARE

RUNS ON IBM OR IBM COMPATIBLES

ORIGINAL VALUE OVER **$3000.00** OF SOFTWARE

YOU GET:

- Perfect Writer (Word Processor)
- Perfect Speller (Spell Checker)
- Perfect Calc (Spreadsheet)
- Perfect Filer (Data Base Manager)
- Fast Graphs by Innovative (Color Reports)
- Home Accountant Plus by Continental
- Asynchronous Communications
- Space Commanders
- GW Basic/Basic A
- MS/DOS 1.25

YOUR COST: **$249.95**

Limited Quantities!! HURRY!!! AMAZING!!

(Basic May Not Run On All Computers CDP-Perfect Series-Version 1.0)

LUXOR-Hi Res 14" Color Monitor
IBM Compatible-720 x 400-RGB
Cable Included List $895
Cost **$299**
Amazing Value

HARD DRIVES - *ALL BRAND NEW
LIMITED AVAILABILITY
Seagate St-213 - ½ Ht - 10 MB — $195
CMI-6640 - Full Ht - 40 MB — $299
Same as Leading Edge® Model

CONTROLLER CARDS ARE AVAILABLE - CALL
All Sold at BELOW DEALER COST!!

COMPUTERS

*** ALTOS** - LOWEST PRICES IN THE COUNTRY!
***AMIGA** by Commodore CALL

APPLE

	YOUR COST
IIE	$ 795.00
IIE-Pro	CALL
IIC-With Monitor	CALL
MACINTOSH-512K (Fat Mac) or (Plus)	CALL
MAC-800K Drive	CALL
MAC-10 MG or 20 MG Hard Drives	CALL
10 MG Hard Drive-For IIE	$ 895.00
Apple Compatible Drive-For IIE or IIC	$ 129.00
Parallel Card	$ 69.00
Serial Card	$ 79.00
Extended 80 Col. Card-For IIE	$ 79.00

COMPAQ
Compaq-Portable CALL
Compaq-286 Series CALL
Desk Pro Series CALL

CORONA -NOW CORDATA
PC-22 - Desktop CALL
PC-HD-2 - Desktop CALL
PPC-22-Portable $1295.00
PPC-XT-Portable - 20MG $1695.00

IBM
PC-256K-2 Drive $1239.00
PC-XT-256K LOWEST POSSIBLE PRICES
PC-AT CALL

ITT-LOWEST PRICES IN THE COUNTRY!!
XTRA-II - 256K - 2 Drive $1095.00
XTRA-III - 256K - 1 Drive 10 MG $1649.00
XTRA-XP and XL Series CALL

LEADING EDGE® - Model D Series — CALL

PRINTERS

BROTHER	YOUR COST
HR-15	$ 349.00
HR-25 or HR-35	CALL

CITIZEN—THE BEST VALUE IN PRINTERS!!

MSP-10	279	10"-160cps-40cps
MSP-15	399	15"-160cps-40cps
MSP-20	329	10"-200cps-50cps-8K Buffer
MSP-25	489	15"-200cps-50cps-8K Buffer

PREMIER 35 or 1200 CALL

COMREX (owned by Epson)
CR-420I - 420 CPS Draft
104 CPS Correspondence
IBM Graphics
LIST $2500
AMAZING PRICE **$1095**

DAISYWRITER
2000-Demo $ 395.00
DIABLO
D25- $ 499.00
635- CALL
D-80 or 4045- CALL
EPSON
FX-85 or FX-286 CALL

FUJITSU—DL-2400
24 wire - 216 cps - 72 cps - NLQ
Best Value-Wide Carriage **$749**

JUKI
6100- $ 369.00
6200 or 6300 or 5510- CALL
MANNESMANN TALLY
Spirit- $ 249.00
MT-85 or MT-86 CALL
MT-460 or MT-490 CALL
NEC
2000/10/15/30/50- CALL
ELF-350/360/370 CALL
P2-P3-P5-P6-P7 CALL
8810- $1149.00

OKIDATA	YOUR COST
192-	$ 299.00
193-	$ 489.00
84-	$ 639.00
292/293-NEW	CALL
2410-	$1709.00

OKIDATA MODEL 93

160 cps - Wide carriage
40 cps - Correspondence Mode
BRAND NEW
FULL WARRANTY
List $900
Your Cost
Lowest Price in the Country
CALL
Quantity pricing available

PANASONIC
1090R-Super Special **$169**
1091- $ 239.00
1092- $ 349.00
3151- or 3131 CALL
1592- CALL

Quadram Quadjet List Cost
Ink-Jet-40 CPS $900 **$295**
Below Dealer Cost!!!

QUME
20P- $ 449.00
11/40- $ 989.00
11/55- $1189.00
11/90- $1489.00
SILVERREED
550- $ 299.00
600- CALL
800- $ 695.00
STAR
SD-10 or SD-15- CALL
SR-10 or SR-15- CALL
SB-10- $ 559.00
TEXAS INSTRUMENTS
TI-855- $ 649.00
TI-850 or TI-865- CALL
TI-860 or TI-850- CALL
TOSHIBA
P-321- $ 469.00
P-341- $ 699.00
P-351- $ 995.00

* COMPUTER PRODUCTS LISTING *

COMPUTERS
ADDS
ALTOS
AMIGA
APPLE
AT&T
BONDWELL
CANON
COMPAQ
CORONA
COMPUPRO
CORVUS
DEC
IBM
ITT
LEADING EDGE
MOLECULAR
N.E.C.
NORTH STAR
QUADRAM
SANYO
SEIKO
SHARP
SPERRY
TELEVIDEO
TOSHIBA
WYSE
ZENITH

TERMINALS
ADDS •ALTOS
AMPEX
ANN ARBOR
CIE
DEC
ESPIRIT
HAZELTINE
IBM
KIMTRON
LEAR SIEGLER
MICROTERM
MOLECULAR
NEC
NORTH STAR
QUME
TATUNG
TELEVIDEO
WYSE

MONITORS
AMDEK
APPLE
C-ITOH
GOLDSTAR
HITACHI
KIMTRON
NEC
NORTH STAR
PANASONIC
PRINCETON GRAPHICS
QUADRAM
ROLAND
SAKATA • SAMSUNG
SHARP • SMD
TATUNG
TAXAN
WYSE
XTRON
ZENITH

PRINTERS
ALPS
ANADEX • APPLE
BROTHER
CANON • CARDCO
CIE • CENTRONIX
CITIZEN
C-ITOH • CORONA
DAISY WRITER
DATA PRODUCTS
DATA SOUTH
DEC
DIABLO
DTC
EPSON
FLORIDA DATA
FUJITSU
GENICOM
HEWLITT PACKARD
IBM • IDS
INTEGRAL
DATA SYSTEM
JUKI
LEGEND
MANNESMANN TALLY
NEC • NISSHO
NORTHERN TELECOM
OKIDATA
OLYMPIA • OTC
PACEMARK
PANASONIC
PRINTEK
PRINTRONICS
QUADRAM • QUANTEX
QUME
SIEMENS
SILVER REED
STAR
TELETEX • TELEVIDEO
TEXAS INSTRUMENTS
TOSHIBA

DISC DRIVES & HARD DRIVES
ALLOY •ALTOS
APPARAT
APPLE • AST
BERMOULLI BOX
CIPHER • COMPUPRO
CORONA • CORVUS
IDE • INDUS
INTERFACE • IOMEGA
IRMA
MAYNARD
MICRO SCI
MITSUBISHI
MOUNTAIN
NEC
PANASONIC • PARADISE
PRIAM
QUADRAM • RODINE
SHUGART • SYSGEN
TALLGRASS TECHNOLOGIES
TANDON • TEAC • TECMAR
X-COMP

MODEMS
ANCHOR AUTOMATION • AST
ANDERSON JACOBSON
BIZCOMP
CEMETEK • CODE-A-PHONE
DATEC
HAYES • IDE
INFORTRON
KENSINGTON • KYOCERA
MICROCOM
MULTITECH
NORTHERN TELECOM
NOVATION • PENRIL
PARADYNE• POPCOM
PRENTICE • PROMETHEUS
QUADRAM
RACAL/VADIC • RIXON
TECMAR • TRANSEND
US ROBOTICS • VENTEL

COMPUTER CARDS OR ADD-ONS
ADVANCE LOGIC SYSTEMS
AST
CARDCO
DCA
HERCULES • IDE
INTERACTIVE STRUCTURES
M.A. SYSTEMS
MICROLOG • MICROTEK • MPC
ORANGE-MICRO • PARADISE
PERSONAL COMPUTER PRODUCTS
PERSYST PRODUCTS
PLANTRONICS
QUADRAM • STB
TALLGRASS TECHNOLOGIES
TECMAR • TITAN SYSTEMS
TYMAC • VIDEO 7

SOFTWARE
MOST TITLES AVAILABLE
CALL FOR THE LOWEST PRICE!!

Send for our computer catalog!

EPSON-QX-16

LIST $2700 YOUR COST **$895**
BELOW DEALER COST!!
BRAND NEW FULL WARRANTY!!!

	List	Cost
10MG Hard Drive System	$3995	$1395

Quantity Pricing Available

Now there is a computer you won't outgrow: the computer that's three computers in one—the new Epson QX-16. The QX-16 features dual 8-bit and 16-bit microprocessors offering you a choice of three operating systems:: Valdocs®2, MS-DOS® and CP/M®.

Microprocessor: 8088 with a clock speed of 6 MH. and a Z-80 with a clock speed of 4 MH.
Internal memory: 512K.
External memory: 2 half-height, 5¼-in. floppy disk drives that operate as 360K double-density drives in 8088 mode, 720K quad-density drives in CP/M and 786K quad-density drives in TPM (Valdocs) mode.
I/O ports: Keyboard, parallel printer, serial RS-232C interface, and 3 internal, Epson bus, expansion slots.
Character display: 80 columns by 25 lines.
Graphics display: 640 pixels (horizontal) by 400 pixels (vertical). Monitor Included.
Video output: IBM video emulator and composite video monitor interface.
Keyboard: 105 full-sized, full-travel keys, including 17 function keys, integral numeric keypad and 4 dual-function cursor control keys.
Software included: MS-DOS 2.11, GW BASIC from Microsoft, CP/M-80, TPM 3 (Valdocs), MTERM communications program, RWCPM CP/M to MS-DOS file converter, editor, spreadsheet, electronic calendar and scheduler, electronic mail program, DRAW graphing program, an electronic filing system and a Professional Word Processing Program.

Electrified Discounters

WE WILL SAVE YOU MONEY!
996 ORANGE AVE.
P.O. BOX 151
WEST HAVEN CT 06516

(203) 937-0106

MasterCard **DEALER INQUIRIES INVITED** VISA AMEX

$2 refund on all telephone orders over $100

All Prices Listed are Cash Discounted. Add 2½% for MasterCard, Visa or AMEX. Not Responsible for Typographical Errors. Prices are Subject to change Without Notice. Conn. Residents Add 7½% sales tax.

IBM is a registered trademark of International Business Machines, Inc.

B. G. MICRO

P. O. Box 280298 Dallas, Texas 75228
(214) 271-5546
FAX (214) 271-2462

7400

7400	.22	7453	.22	74154	1.19
7402	.22	7454	.22	74157	.30
7404	.22	7472	.20	74160	.80
7405	.22	7473	.28	74161	.50
7406	.23	7474	.30	74162	.50
7407	.23	7475	.35	74163	.50
7408	.24	7483	.45	74164	.70
7410	.17	7485	.55	74165	.70
7413	.33	7486	.30	74166	.90
7420	.22	7490	.40	74173	.75
7425	.25	7493	.30	74174	.70
7427	.25	7496	.30	74175	.80
7428	.25	74107	.20	74192	.70
7430	.15	74109	.45	74193	.80
7432	.20	74116	.99	74195	.80
7433	.25	74121	.27	74199	1.00
7438	.22	74123	.40	74221	.60
7440	.19	74125	.40	74273	1.75
7442	.35	74139	.35	74298	.40
7445	.49	74145	.40	74365	.60
7447	.59	74148	.90	74366	.60
7448	.59	74151	.50	74367	.50
7451	.18	74153	.35	74390	1.40

74LS

LS00	.15	LS122	.35	LS242	.70
LS01	.15	LS123	.45	LS243	.50
LS02	.15	LS124	1.50	LS244	.55
LS03	.15	LS125	.30	LS245	.55
LS04	.17	LS126	.40	LS251	.45
LS05	.15	LS132	.40	LS253	.40
LS08	.15	LS133	.25	LS257	.45
LS09	.15	LS138	.35	LS258	.50
LS10	.15	LS139	.35	LS259	1.00
LS11	.15	LS145	.75	LS260	.40
LS12	.25	LS151	.35	LS266	.30
LS13	.30	LS153	.35	LS273	.75
LS14	.30	LS154	.85	LS279	.30
LS15	.20	LS155	.50	LS280	.80
LS20	.15	LS156	.42	LS283	.35
LS21	.16	LS157	.35	LS290	.70
LS27	.20	LS158	.35	LS293	.75
LS30	.19	LS160	.35	LS298	.65
LS32	.24	LS161	.40	LS299	1.50
LS33	.25	LS162	.60	LS323	2.25
LS37	.30	LS163	.36	LS348	.75
LS38	.25	LS164	.56	LS364	.90
LS42	.35	LS165	.80	LS366	.40
LS51	.20	LS166	.75	LS367	.40
LS54	.25	LS169	1.00	LS368	.30
LS55	.20	LS174	.35	LS373	.55
LS73	.30	LS175	.35	LS374	.60
LS74	.28	LS181	1.25	LS375	.35
LS75	.28	LS191	.80	LS377	.90
LS85	.45	LS192	.70	LS378	.80
LS86	.24	LS193	.75	LS390	.80
LS90	.40	LS194	.40	LS393	.75
LS93	.50	LS195	.52	LS399	1.00
LS107	.28	LS196	.70	LS541	1.20
LS109	.20	LS197	.75	LS645	.75
LS112	.25	LS221	.50	LS670	1.00
LS113	.25	LS240	.50	LS724	.40
LS114	.25	LS241	.60		
				26LS30	.75
25LS2569		1.50		26LS32	.75

74ALS

ALS00	.45	ALS21	.45	ALS74	.45
ALS08	.45	ALS30	.45	ALS113	.45
ALS10	.45	ALS37	.45	ALS161	.60
ALS11	.45				

74F

F00	.45	F109	.70	F244	1.49
F10	.45	F138	.79	F245	1.49
F14	.55	F139	.79	F257	.89
F20	.45	F151	.79	F258	.99
F32	.50	F164	.89	F374	1.59
F74	.60	F240	1.49	F283	3.50

74S

S00	.25	S85	.45	S182	1.99
S02	.25	S86	.29	S189	.99
S03	.25	S112	.40	S195	1.25
S04	.25	S132	.99	S240	.99
S05	.25	S133	.29	S241	.75
S08	.29	S134	.40	S244	.99
S10	.25	S138	.60	S251	.60
S11	.25	S139	.60	S280	1.25
S15	.29	S151	.60	S283	1.25
S20	.25	S153	.60	S373	.99
S32	.29	S157	.70	S374	.99
S51	.29	S169	3.00	S381	1.49
S64	.29	S174	.70	S387	1.25
S74	.33	S175	.70		

74HC

HC00	.40	HC109	.44	HC173	.65
HC02	.40	HC112	.44	HC241	.99
HC04	.40	HC138	.49	HC242	.79
HC08	.40	HC139	.49	HC244	.99
HC10	.40	HC147	.55	HC245	1.49
HC30	.40	HC153	.65	HC257	.65
HC32	.42	HC154	2.00	HC259	.79
HC74	.44	HC157	.65	HC273	1.50
HC75	.44	HC163	.65	HC373	.99
HC86	.55	HC165	1.10	HC4002	.49
HC107	.44				

74HCT

HCT138	.79	HCT240	1.09	HCT245	1.09
HCT154	2.00	HCT244	1.09	HCT373	1.09
HCT175	.75				

STATIC RAM

2016-2KX8 200 n.s.	1.20
2101-1 - 256X4 500 n.s.	.75
21L02-1 350 n.s.	.65
2102AL-4 L.P. 450 n.s.	.49
2111-1 256X4 500 n.s.	1.00
2112A-2	2.50
2114L-3 1KX4 300 n.s.	.50
2125A-2 1KX1 70 n.s.	1.70
2147 4KX1	1.95
TMS4044 4KX1	1.00
6116P-4-2KX8	1.25
6117	1.20
6264-15	3.25

DYNAMIC RAM

2108-4 8KX1	1.50
2118-4 16KX1-5Volt	.70
4027-4KX1-250 n.s.	.80
4116-16KX1-250 n.s.	.50
4116-16KX1-200 n.s.	.75
4116 16KX1-150 n.s.	.90
4164- +5v 64K 200 n.s.	.75
4164 150 n.s.	.90
TMS4416-16KX4-150 n.s.	3.00
MK4516-15 16KX1-5Volt	.70
5280N-5 (2107B-4 • TMS4060) 4KX1	8/3.95
41256 150 n.s.	3.00
41256 120 n.s.	3.30

F.D. CONTROLLERS

765	3.99
1771 Single Density	3.49
1793	4.49
1795	5.00
1797	5.50
2793	7.00
2797	7.25

CONTROLLER SET

THREE CHIP SET
1797 or 1793, 2143-03, 1691
by W.D.
B.G. SPECIAL
All 3 for only $12.00

EPROM

2708 1KX8 450 n.s.	2.00
2758 1KX8 +5V 450 n.s	2.00
2716 2KX8 450 n.s.	3.00
2716-1 2KX8 350 n.s.	3.25
2732 4KX8 450 n.s.	3.20
2732A	3.40
2732A-35	2.95
2532 4KX8 450 n.s.	2.90
2764-200	3.50
2764-25	3.10
2764-45	2.50
27128A-200	3.95
27128-25	3.75
27128-4	3.20
27256	5.30

EPROM SPECIAL

We bought a large quantity of 2708s and 2716s from a computer manufacturer who redesigned their boards. We removed them from sockets, erased and verified them, and now we offer the savings to you. Complete satisfaction guaranteed.

Your Choice

2708	1.20	10/8.00
2716	1.75	10/15.00

BAUD RATE GENERATOR

BR1941	3.50
1945(WD8136M-00)	3.50
COM8116	2.95
INS8250B	5.95

DRIVERS & RECEIVERS

1488	.45
1489	.45
26LS30	.75
26LS32	.75
75107	.30
75110	.30
75112	.30
75451	.25
75452	.35
75453	.35

UART

TR1602B (COM 2017)	1.75
IM6402 +5v High speed AY5-1013 pin out	2.95
INS 8250B	5.95

CLOCK CIRCUITS

58174	4.00
5832	2.50
58321	2.50

Z80

Z80 2.5 MHZ CPU	1.00
Z80CTC	.49
Z80 DART	3.50
Z80DMA	4.50
Z80PIO	1.00
Z80SIO/O	3.50
Z80A-4MHZ CPU	1.50
Z80A-CTC	1.50
Z80A DART	5.50
Z80A-DMA	5.50
Z80A-PIO	1.59
Z80A SIO/O	4.59
Z80B 6 MHZ CPU	3.50

8000/80000

Z8002	20.00	8254	7.50
8031	4.95	8254-2	9.50
8035	3.00	8255-5	2.25
8039	3.00	8257	2.25
8040	3.50	8259A	2.25
8085	3.00	8259C-5	2.75
8086	5.00	8275	14.95
8087	120.00	8279-5	3.25
8087-2	139.00	8284	2.50
8088	5.50	8287	5.75
8155	2.25	8288	4.50
8202A	8.00	Z8603	4.95
D8203-1	29.95	8741	9.50
8212	1.25	8748	9.50
8214	2.00	8749	9.50
8216	1.25	8755	12.95
8228	3.25	80186-6	29.95
8237-5	5.00	80286-8	119.95
INS 8248	4.95	80287	185.00
8243	2.00	80287-8	300.00
8250B	5.95	V-20-5MHZ	9.50
8251	2.25	V-20-8MHZ	12.50
8253-5	2.25		

6500/6800

6502	2.55	6820	2.75
6522	3.50	6821	1.50
6532	5.00	6840	6.00
6545	4.50	6845P	4.00
6551	5.00	6845S	4.50
6800	1.75	6850	1.75
6802	3.50	6852	3.50
6803	3.00	6860	3.95
6805	2.95	68A09EP	3.99
6809EP	3.99	68A21	3.00
6809P	3.50	68B40	8.50
6810	1.25	68B45	8.00

CRYSTALS

32.768 Khz	.65	9.90000	1.25
43.740	.55	10.000	1.25
262.144	.75	10.69425	2.50
300.000	.75	10.738635	1.00
1.5432 Mhz	.75	10.8864	1.49
1.8432	1.59	10.920	1.49
1.940	1.10	11.088	1.59
2.000000	2.49	11.155	1.00
2.4576	2.10	12.000	2.00
2.560	1.49	13.17020	.70
3.000	1.15	13.440	1.00
3.120	1.20	14.31818	1.00
3.2	1.49	15.000	.75
3.4560	1.49	15.2	1.10
3.579545	.60	16.00000	1.50
3.6864	1.10	16.5888	1.49
4.000	1.75	17.430	2.49
4.194304	1.50	18.2259	1.00
4.433618	.75	18.4320	1.49
4444.000	1.25	18.432OSC	2.95
4.9152	2.49	20.000	1.29
5.000000	1.50	20.375040	.60
5.0688	1.70	21.87108	1.00
5.120	1.25	24.000	2.00
6.000	1.00	32.000	2.49
6.144	1.75	40.000	2.00
6.176	1.49	87.3333	1.00
7.164112	1.00	91.000	1.00
7.3728	1.49	104.8	1.00
8.000	1.49	143.7640	.75

CRT CONTROLLERS

5027	6.95
5037	6.95
68B45-(HD46505SP)	8.00
8275	14.95
TMS9918ANL	7.50

1986 I.C.Master
$119.95

TERMS: (Unless specified elsewhere) Add $1.50 postage, we pay balance. Orders over $50.00 add 85c for insurance. No C.O.D. Texas Res. add 6-1/8% Tax. 90 Day Money Back Guarantee on all items. All items subject to prior sale. Prices subject to change without notice. Foreign order - US funds only. We cannot ship to Mexico. Countries other than Canada, add $3.50 shipping and handling

B. G. MICRO

P. O. Box 280298 Dallas, Texas 75228
(214) 271-5546
FAX (214) 271-2462

MasterCard VISA AMERICAN EXPRESS Card

LINEAR

LM301	.29	LM1458	.22
LM311	.50	LM1488	.45
LM317T	.65	LM1489	.45
LM319	.75	MC1558F	1.49
LM324	2/.99	LM1889	1.29
LM339	.40	ULN2003	.59
LM358	.25	ULN2068	.59
LM380	.75	ULN2074	.75
LM386	.59	LM2917	.50
LM393	.40	CA3146	.75
NE555	.22	3341	.75
NE556	.45	MC3403	2/.99
NE558	.75	MC3486	.75
NE564	1.29	MC4024P	2.29
NE567	.49	UA4136	.59
NE570	2.00	4558	.40
NE592	.69	MC4741	2/.99
LM723	.35	MM5395	1.25
LM733	.49	DS8835	1.50
LM747	.49	DS8837	1.40
MC1350	.89		

PROMS

82S123	1.99
82S126	1.99
82S129	1.99

VOLTAGE REGULATORS

LM317K	1.40
LM317T	.65
723	.35
78M05T - 500 MA	.22
7805T	.35
7808T	.50
7812K	1.00
7812T	.40
7912K	.50
7912T	.50
7815T	.50
7915T	.50
7824T	.50
7924T	.50
78GU1C (T)	.50

SWITCHING REGULATOR

SG3524 Features:

- Complete PWM power control circuitry
- Single ended or push-pull outputs
- Line and load regulation of 0.2%
- 1% maximum temperature variation
- Total supply current less than 10mA
- Operation beyond 100kHz
- 16 Pin D.I.L.

1.59

SOCKETS

Low Profile SOLDER TAIL

6 Pin	14/1.00
8 Pin	13/1.00
14 Pin	10/1.00
16 Pin	8/1.00
18 Pin	8/1.00
20 Pin	7/1.00
22 Pin	7/1.00
24 Pin	6/1.00
28 Pin	6/1.00
40 Pin	5/1.00

BUY $10
GET $1.00 - FREE CHOICE

DELAY LINE

For Dynamic Memories. Pick any delay from 10 to 100 n.s. with this dual in line 14 pin device from Pulse Engineering. 10 Taps

PE9825 - 1.49 each.

BI-FET

TL082	.75
TL084	.90
LF351	.39
LF353	.49
LF356	.55
LF444	.49

SPECIAL FUNCTION

TL494	2.50
TL497	2.20
AY38910 w/Manual	7.00
TMS99532 MODEM	9.95
AM7910 MODEM	9.95
2672	3.95
2673	3.95
MK5087	2.00
MK5089	2.00

MISCELLANEOUS

2651	2.49
AM2901	1.55
AM2907	1.75
AM2909	1.65
AM2911	1.75
AM31LO1	1.75
4015B	.20
4040	.49
4511	.49
4538	.70
ICM7218C	1.25
ICM7218D	1.25
74C903	.50
74C912	4.95
8T97	.50
8038	3.75
9216	2.00
9401	3.50
16 pin dip Shunt	4/1.00
DAC08CN	1.79
6100 - CMOS 12 Bit CPU	3.95
NSC 800	3.95
9403 FIFO	2.25

DIP SWITCHES

4 Position	.40
5 Position	.50
6 Position	.70
7 Position	.50
8 Position	.50
10 Position	.65
12 Position	.75

ENGINEER'S DELIGHT

Ten each of the most popular LS devices. These 30 LS devices are from OEM overstocks, parts pulled from sockets (No solder pulls), test house over-runs, etc. ALL parts have straight leads - No junk here! Here is what you get: 270 pcs. - 10 each of the following: LS00, LS02, LS05, LS08, LS10, LS14, LS20, LS32, LS33, LS74, LS86, LS113, LS138, LS139, LS157, LS175, LS240, LS241, LS243, LS244, LS253, LS258, LS283, LS367, LS373, LS374, & LS393. Plus 30 other various devices of our choice. COMPLETE SATISFACTION GUARANTEED.
All Devices 100% factory spec.
300 devices for an unbelievable

$30.00

Please order B.G. #1.
No Substitutions, Please!

PC-XT Compatible Dot Matrix Printers by Olivetti Model # PR1450

BRAND NEW IN ORIGINAL FACTORY BOXES. HIGH SPEED: 100 CPS - INCLUDES LONG LIFE PACK - CART RIBBON CARTRIDGE - FRICTION OR PIN FEED - CENTRONICS PARALLEL INPUT, IBM P.C., X.T. COMPATIBLE. HEAVY DUTY CONSTRUCTION FOR CONTINUOUS SERVICE. MULTI-FUNCTIONAL CHARACTER FONT. DIP SWITCH OR SOFTWARE SELECTABLE PRINT FORMAT FOR EITHER 80 COLUMN STANDARD, 132 COLUMN COMPRESSED, OR DOUBLE SIZE CHARACTERS. FORM LENGTH ALSO PROGRAMMABLE. ORIGINALLY COST BIG COMPUTER COMPANY SERVERAL TIMES OUR SALES PRICE.

NEW IN BOX WITH DATA
PRINT MATRIX 9 x 7
ADD $6.00 U.P.S.
CANADA ADD $15.00 POSTAGE

$129.00

PANASONIC

Green Screen - Video Monitors

25 MHZ. TYPICAL BANDWIDTH!!!

Brand New In The Box! 9-Inch Screen

#K-904B1 (Chassis #Y08A) Open Frame Style

Limited Quantity

$29.95 EA.

IBM PC COMPATIBLE!
We have just received data on how to connect these monitors to a PC/XT through a color/graphics card. We tried it and it works great! Now you can buy a low cost monitor to use in place of those expensive RGB color monitors. Data and hook-up free on request.

GROUP SPECIAL:
4 for $99.00
WITH DATA & SCHEMATIC

(USA SHIPPING: $3. PER UNIT. CANADA: $7. PER UNIT)

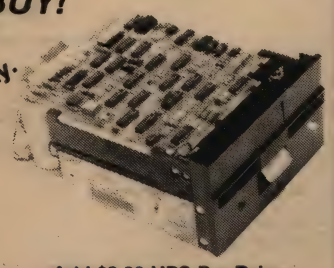
COMPUTER MANUFACTURER'S EXCESS. STILL IN ORIGINAL PANASONIC BOXES. THE CRT TUBE ALONE WOULD COST MORE THAN OUR PRICE FOR THE COMPLETE UNIT. FOR SPLIT VIDEO (TTL INPUTS) OPERATION, NOT COMPOSITE VIDEO. OPERATES FROM 12VDC AT 1 AMP. VERTICAL INPUT IS 49 TO 61 HZ. HORIZONTAL INPUT: 15,750 HZ ± 500 HZ. RESOLUTION IS 800 LINES AT CENTER 650 LINES AT CORNERS.

REPEAT DRIVE DEAL 5¼" FULL SIZE DRIVES

A GREAT BUY!

$39.95
2/$69.95

Limited Qty.



- 80 Track Per Side 96 TPI
- Double Sided Quad Density
- Fast Access Time

Add $3.00 UPS Per Drive

TERMS: (Unless specified elsewhere) Add $1.50 postage, we pay balance. Orders over $50.00 add 85c for insurance. No C.O.D. Texas Res. add 6-1/8% Tax. 90 Day Money Back Guarantee on all items. All items subject to prior sale. Prices subject to change without notice. Foreign order - US funds only. We cannot ship to Mexico. Countries other than Canada, add $3.50 shipping and handling.

B. G. MICRO

P.O. Box 280298 Dallas, Texas 75228
(214) 271-5546
FAX (214) 271-2462

"TALKERS"

SPEECH SYNTHESIS TECHNOLOGY AT SURPLUS PRICES!

We were recently fortunate to purchase a small lot of surplus computer boards that incorporate the very latest in high quality human speech synthesis.

This two board set was the heart of a blood analysis system designed for use by blind diabetics. This unique device was conceived by one of the world's leaders in computer blood systems. Apparently no expense was spared in either the research, design, or fabrication of this computer.

The board sets we are offering are NOT complete blood analysis systems and are sold only for the speech synthesis circuitry they contain. A powerful motorola 68705 U3L single chip processor controlled the blood analysis unit. This processor also interfaces to the General Instruments two chip speech set which includes a SPO256-AL2 (28 pins) and a SPROOO (40 pins).

The GI SPO256 contains 59 addressable allophones and 5 pauses which may be strung together to produce any English word. The SPROOO allows expansion to the external EPROM (27128) for storage of the desired vocabulary. The SPO256 also has a vocal tract model, 16K ROM, ALU, handshake control, pulse width modulator, 12 holding registers, and 5 interpolation registers all in one 28 pin package! This high density chip design allows for a complete voice system that requires only a few parts to be complete.

By adding only one resistor, the units can be put into a "Test" mode to demonstrate the internal vocabulary. This board set has been selling like crazy at surplus stores in both Dallas and Houston. We have, however, set aside a limited number of these boards for sale to our special mail order customers. One resourceful customer in Houston even had one of these "Talkers" connected to his personal computer doing random speech!

These devices were powered by a regulated 9VDC 1 Amp power supply. We have luckily acquired a FEW of the supplies, and are selling them for $6.95 each when purchased WITH the Talkers. The DC supply is a totally self contained affair that is rated for only 10 mv ripple at the output. DC supply when purchased separately is $12.95.

We are also offering the GI set separately (new, unused parts) for $9.95. Remember: this is for BOTH chips. Radio Shack sells the SPO256 alone for $12.95!! Our stock on the new chip pairs is limited, please order early to avoid being left out. Sure, the completed Talker units are a better deal, but you still might want to purchase an extra chip set for a spare.

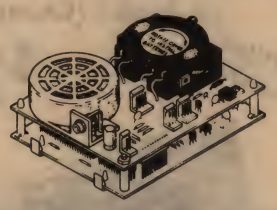
For the real hardware hackers we have a few of the blank PC board sets to the Talkers for $4 (both boards).

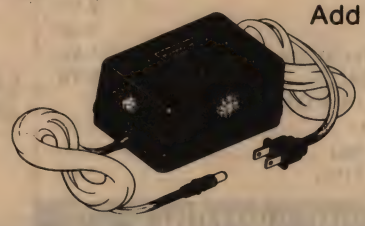
We include full schematics of the Talkers, GI speech chip set data, and "Test" instructions, with every shipment. Note: issue #29 of Analog Computing (P.O. Box 615 Holmes, PA 19043) has a very detailed article on using the SPO256 with a personal computer.

Due to the limited number of Talkers in stock, we advise early ordering.

Radio Shack tm of Tandy Corp.

3.12 Crystal **$1.20**
Chip Set **$9.95**
P.C. Board Set **$4.00**
Power Supply Alone **$12.95**





Add $3 Shipping in USA, Canada: add $6
(For Talker and supply)

Talker **$14.95**
Power Supply **$6.95**
(When Ordered With Talker)

WE'VE GOT EM!

5-1/4"
HALF SIZE DRIVES!
For IBM PC, TI PC, XEROX 820

- 40 Track per side 48 TPI
- Double-sided, double density
- Fast access time - 6 ms

*Two of These Half Size Drives will Fit in the Same Space as 1 Full Size Drive!

$69.95

ADD $3.00 UPS PER DRIVE

MANUAL FOR ABOVE — $12.50

- 80 Track per side 96 TPI
- Double-sided, quad density
- Fast access time — 6MS

*Two of These Half Size Drives will Fit in the Same Space as 1 Full Size Drive!

$99.95

ADD $3.00 UPS PER DRIVE

IBM PC, XT COMPATIBLE KEYBOARD

Computer manufacturers excess.
Brand new units manufactured by Micro Switch.

Kit includes keyboard, plastic housing, with built-in palm rest.
Coiled connecting cable and hardware.
Assembles in only 3 minutes.
Has same make and break codes as standard PC, XT keyboard.
Also works fine with most clones or compatibles.
This high quality American manufactured keyboard with custom designed housing originally cost a large OEM over $100.00 each in very large quantities.
Coiled connecting cord plugs into keyboard for easy replacement.
Extra cables $3.95

$29.95 Each *or* **3/$81.50**

Add $3.00 for UPS per unit

TERMS: (Unless specified elsewhere) Add $1.50 postage, we pay balance. Orders over $50.00 add 85¢ for insurance. No C.O.D. Texas Res. add 6-1/8% Tax. 90 Day Money Back Guarantee on all items. All items subject to prior sale. Prices subject to change without notice. Foreign order - US funds only. We cannot ship to Mexico. Countries other than Canada, add $3.50 shipping and handling.

S-100™ SINCE 1977

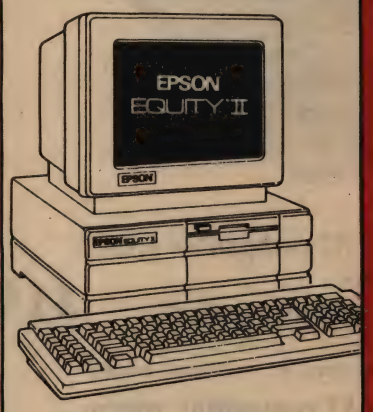
WHEN OUR AD SAYS "CALL" WE WILL NOT BE UNDERSOLD!

** ALL DEALS SUBJECT TO VERIFICATION **

602-991-7870 Customer Support

800-528-3138 For orders Only

THE CURE FOR THE COMMON CLONE!



EPSON EQUITY II

IBM-PC compatibility mated to the new NEC V30 microprocessor gives you 8086 CPU power at speeds of 4.77 and 7.16 MHz. On board you'll find 640K RAM, color and Hercules compatible graphics, clock/calendar and 5 full size option slots - all standard equipment! Add to this two 360K drives, an AT-type keyboard and a one year warranty - well, you can see it makes sense to start building some EQUITY into your business.

The Epson EQUITY II.....CALL

CAD

houston instrument

DMP 41/42..... $2449
DMP 51/52..... $3699
DMP 56..... $4399
DMP 29..... $1699
DMP 40..... $889

True Grid Digitizers

TG 1005..... $289
TG 1011..... $509
TG 1017..... $619
Also: cursors, styli, etc.

HANZON LP-3000+ LASER .. CALL
HPGL PLOTTER COMMANDS!!

NEC *MULTISYNC*..... **CALL**

ACS *GRAPHAX 20/20* 2K by 2K Graphics Resolution Single Card Design, up to 32 Colors, Supports AutoCAD ..... **CALL**

cordata

formerly corona data systems, inc.

PC400 SERIES
- 2 DSDD Floppy Drives
- 512 K RAM
- 640x400 Monitor (Desktop)

$1149 **WITH 20MB HARD DISK** **$1499**

2 Floppy Drive Portable....$1149 with 20Mb....$1499

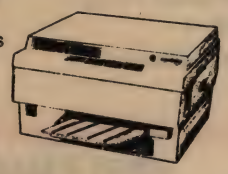
ATD/ATD
- 80286 CPU @ 8MHz
- 1.2 MB Drive
- HI Res Graphics (640x400)
- S/P Ports .640K RAM

CALL

DESKTOP PUBLISHING

Create professional looking newsletters, ad copy, documents etc. with LASER accuracy

- 300x300 dots • 38 fonts
- 8 pages/min • Autofeed
- Cable & Toner Included
- WordStar 2000
- Form Easy



LP-300 DESKTOP PRINTSHOP $2199

H.D. & Tape Subsystems

20MB HARD DRIVES with controller

$399

Now you can't afford not to have the storage power of a 20 megabyte Seagate Hard Drive. Call Now! We will not be undersold!

MORE HARD DRIVES, ETC.

Quantum Q-540 40MB **1 Year Warranty** **$879**
Micropolis 1325 85MB 25ms Access **$1399**
Wangtek PC-36 60MB Int Tape Complete . **$889**
Tecmar QIC-60 Ext Tape w/Host **$1449**
Western Digital Controller **$99**
Alloy PC-9TRACK ½" Tape Cartridge .... **CALL**

PC-INSIDER/OUTSIDER, AT-INSIDER, Hard Disk Series for IBM. Boots from Hard Disk, Formatted w/ Ctrl. & Cbls., Hardware & P/S or PC Style Cabinet..... **CALL NOW!**
TECMAR *QIC-60* External Tape **$1359**
TECMAR *40410* - 11 Slots 33+5Mb Remove. **1995**
SMS OMTI *5510* - 7 Controller **109**

ATTENTION! *Z80 CP/M OWNERS:*
Hard Disk Subsystems with 20Mb Entry Level .... **STARTING AT$795**

Monitors and Terminals

NEC

MULTISYNC **$529**

LIBERTY

LIBERTY FREEDOM ONE..... **$385**
LIBERTY *Freedom Terminals*..... **CALL**

WYSE 60..... **449**
ZENITH *ZVM-1240* Amber (IBM) **155**
PRINCETON GRAPHICS *ALL MODELS* . **CALL**
TATUNG *CM-1360* 640x200 RGB, 13", Green/Amber Switch **379**
TATUNG *MM-1222* HiRes 12" TTL (IBM)... **109**
TATUNG *CM-1380* EGA 640X350 RES. **499**
TATUNG *1422A* Dual FREQ, Tilt/Swivel, Amber/Green..... **139**
LINK *125* Emulates WY-50 & others, HiRes 14" G/A 6 Scroll Rates; IBM Selectric K.B. 1 YR Warr..... **399**
LINK *PC-TERM* Emulates WY-50, TVI 925 & More, 132 Col, IBM-AT KB, Ideal for Multi-user PC-Slave BDS. **449**

Printers and Buffers

XEROX *D25 Disblo* **$497**
DIABLO *635*..... **$1049**
DIABLO *34LQ*..... **$989**
4045 LASER *With Copier*..... **CALL**
OKIDATA *292* Color Printer **$459**
OKIDATA *293* Color, w/ Trac, 132 Col **$599**
PERSONALITY BOARDS **$88**

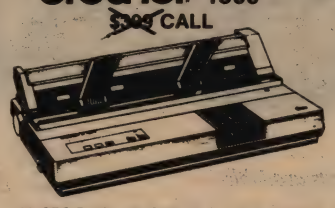
NEC

SPINWRITER 2050 20 CPS..... **$625**
SPINWRITER 3550 35 CPS..... **$849**
SPINWRITER 8850 55 CPS..... **$1219**
P-660 216/65 CPS **$509**
P-760 216/65 CPS WIDE CARR..... **$649**
P-560XL 290/100 CPS COLOR **$1239**

TOSHIBA

P-321 216/72 CPS, 24 PIN..... **$589**
P-341 216/72 CPS, WIDE CARR, 24 PIN .. **$899**
P-351 288/100 CPS, WIDE CARR. 24 PIN **$1199**

brother 1509
~~$399~~ **CALL**



180 CPS Draft - 45 CPS NLQ - Push Tractor Auto Feed - S & P Ports - Wide Carriage Epson Compatible - More!

brother TWINWRITER
~~$895~~ **CALL**

Finally, Daisywheel Letter Quality **and** Dot Matrix Graphics in one Printer! Call 1-800-528-3138 Today and find out more about the amazing Brother TwinWriter.

BROTHER *M-1109* 100/25 CPS **$179**
BROTHER *HR-15XL* 17cps Daisey, S or P **$299**

Floppy Disk Drives

MITSUBISHI *2894* 8".....**$475** *2896* 1/2 ht 8"**$435**
MITSUBISHI *MF501* 48TPI / *MF504* **95/149**
TEAC *FD55GFV / IBM-AT* 96TPI **125**
TEAC *FD55FV* 96TPI...**$115** *FD55BV* 48 TPI . **95**

PC and AT Extended Memory

We carry **Multifunction & Memory Cards for IBM-PC, XT, AT, portables and compatibles!**

intel

INTEL Above Board PCMB 1010 - 64K to 512K - Allows Lotus, Symphony, others to run above 640K. **$255**
INTEL *Above Board-AT* 128K to 4MB **399**

PC Boards, etc.

STB *RIO GRANDE* 128K to 5MB for PC/AT **269**
TECMAR CLOSE OUT!! Save $$$! ..... **CALL**
TECMAR *IEEE 488* ..... **CALL**
TECMAR *WAVE* 64K + RAM..... **155**
TECMAR *BOSUN* ½ Card I/O **95**
TECMAR *MAESTRO ZERO K* **269**
TECMAR *II SLOT EXPANSION CHASSIS* w/ 33Mb Fixed & 5Mb Remov. Hard Disks... **1895**

MACROTECH *MSR-AT* 6,8,10,12MHz w/ No Wait States 0 to 3Mb RAM ..... **$185 to $625**

INDUSTRIAL COMPUTER DESIGNS
1018-PC 96TTL I/O Lines **$446**
A/D 64-PC 64 Input **$446**
D/A 64-PC 64 Output **$527**

AST

6 PACK PLUS **$155**
6 PACK PREMIUM **325**
RAMPAGE AT..... **429**
ADVANTAGE..... **325**

Software

We sell all well known brands. **ORDER CORRECTLY - SW IS NOT RETURNABLE!**
NEW STAR *NEWWORD 2* **$169**
NEW STAR *NEWWORD 3* for PC's. Spell Check, Indexing, Content Tbls, Macro's, Shorthand keybd. Run other prgms while in NewWord.**$269**
BD SOFTWARE *C Compiler* 8" SSSD 8 bit . **$95**
MICROSOFT & ASHTON-TATE ... **40% Off List**
MOST OTHER SOFTWARE ..... **45% Off List**

Hobby Corner

ADAPTEC *2002A* ST-506 PC Hard Disk Ctrl **195**
TECMAR *eSCAN* Copies Text, Drawings, Graphs Directly to PC, XT, AT Disk Drive w/ up to 6 fonts O.C.R. **1398**
STB *SUPER RIO* 256k, S,P,G, Clk **199**
SYGEN *ST-506* CTRL to 140Mb **149**
U.S.R. *AUTO DIAL 212A* Hayes Compat ... **229**
U.S.R. *PC MODEM* 256K, Paral., Clk, Telpac **169**
U.S.R. *PC ½ CARD MODEM* W/ Telpac **149**
XEBEC *XE1210A* ST-506 PC Hard Disc Ctrl. **195**

Computer Systems

IBM-PC COMPATIBLES

We carry a wide range of Desktop, Laptop & Portables designed to run the software that fuels today's business.

CORONA *PC-400* 512K, Monitor..... **$1149**
SHARP *PC-7000* 8086 LAPTOP..... **1299**
COMPAQ ..... **CALL**
XEROX *6064* AT&T 6300 Compatible **From 1688**
IBM-PC/XT/AT ..... **CALL**
ZENITH *148, 158, 171, 200AT* ..... **CALL**
SPERRY *IT, HT, USER NET* ..... **CALL**
ACS *ET-286* 1Mb, 3S & 2P, CLK, 8 Slots, 6/10/12.5MHz, 20Mb & 1.2Mb Disks, MSDOS 3.2 ..... **Complete $2595**
ACS-1000 SYSTEM 8/4.77MHz, 2 Flpy Drvs, 1Mb RAM, 20Mb H.D. Drv., Color/Mono Ctrl, MSDOS 3.2, SASI, 2S/P Ports,Clk/Cal..... **1650**
ALTOS COMPUTER SYSTEMS — NEW! CALL

Networking

ALLOY

PC SLAVE / 16 1Mb, 8MHz, V20 ..... **$595**
RTNX Runs Under MS-DOS 2.1 ..... **$109**
ATNX Runs Under MS-DOS 3.1 ..... **$189**

Inter-Continental Micro

LAN PC ARCNET FOR PC's..... **$349**
WS-286 8MHz, 80286, 5 Slots, Arcnet Interface 640 K RAM, SCSI, AT Enclosure & P/S .. **$1398**

NOVELL

ADVANCED NETWARE STARTER KITS, S/W, Keycd, 2 Network I/F Cds, Cbls .... **from $1795**

SPERRY

User Net Software / 86 and Keycard **$895**

Modems

HAYES - ALL MODEMS..... **CALL**
MULTITECH *MT224EH* MNP Error Corr ... **529**
MULTITECH *MT224ER* Rack Mount w/ EDC**495**
CTS 224ADH Hayes 2400 Compatible **295**
CTS 212AHC Hayes Compatible..... **149**

ProModem 1200 from PROMETHEUS

PROMODEM 1200/2400-Hayes Compatible with Power Supply ..... **$275/$385**
PROMODEM 1200G without Options **189**
PROMODEM 300C - Apple IIc Piggy Back **129**

S-100 DIV./696 CORP.
14455 NORTH 79th ST.
SCOTTSDALE AZ 85260

All merchandise new. Advertised prices are cash prepaid only. PO's from qualified firms & AM. Express - add 5%. MC & Visa - add 3%. Wires, COD's ($5 min. fee) with Cashiers Check/MO & APO's accepted. Shipping: minimum $4 first 5 lbs. Tax: AZ RES ONLY add 6½% sales tax. All returns subject to 20% restocking fee or credit towards future purchases. All prices & availability subject to change without notice.

602-991-7870
Customer Support
800-528-3138
For orders Only

SINCE 1977
S-100™

AT COMPATIBLE

Summer Special $1295

MADE IN U.S.A.
NOT A FOREIGN COPY

SERVICED IN U.S.A.
Extended Warranty available

Runs Xenix™
Auto Cad
NOVELL NETWORK
MULTI TASKING

- *Free Set-up Utility*
- *48 hours Burn-in*
- *8/6MHZ, 8 MHZ CPU Chip*
- *1.2MB Floppy Drive*
- *195W Power Supply*
- *Touch-type Keyboard*
- *Fully Compatible BIOS, written in U.S.A.*
- *W.D. Hard Disk/Floppy Disk controller*
- *512K RAM, expands to 1 MB*
- *Clock/Calendar with Battery Backup*
- *33% faster than IBM AT*
- *Full Documentation and Manual*

FREE
Fully configured and tested for your system requirement

- *One Year Limited Warranty*
- *Dealers and Corporate qty. Discounts available*

☐ With 20MB Seagate 65MS 1/2 Ht.	*$355*
☐ With 20Mb Seagate 39MS Full Ht.	*$549*
☐ G.W. Basic	*$95*
☐ DOS 3.1	*$85*
☐ 80287-8 8MHZ	*$225*
☐ **80287-5 5MHZ**	*$195*

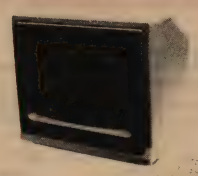
CLUB CT Color AT compatible system
- *Basic System as above*
- *Plus Color Display card and color monitor*
- *High Quality*
- *Fully Assembly and tested, no installation require*

$1599

Club CT Mono AT compatible system
- *Basic System as describe above plus Monochrome Display card and IBM quality Monochrome monitor*

$1499

IBM QUALITY MONO-MONITOR



- *12" screen*
- *800 x 350 resolution*
- *Non glare*
- *FCC class 'B' approved*

$138

HIGH RESOLUTION MONITOR

- *16 colors*
- *640 x 200 resolution*
- *13" screen*
- *RGB Input*
- *FCC class 'B' approved*

$345

EGA Monitor

- *640 x 350*
- *640 x 200*
- *EGA and CGA*
- *FCC class 'B' approved*

$480

NEC MULTISYNC

- *800H x 560V*
- *No Installation Required*
- *EGA, PGA, CGA Compatible*
- *Text Mode Switch*

$559

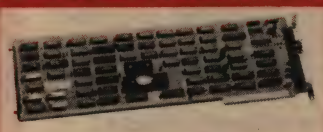
Universal Display Adapter

- *FCC class 'B' approved*

$248

- *Mono Dispaly-Hercules compatible*
- *132 columns text, color or mono*
- *Color Display-16 colors*
- *Parallel Port*
- *One Year Limited Warranty*

132 columns Hercules compatible MONOGRAPHIC



Made in U.S.A. **$99**

- *Printer Port*
- *Monochrome Graphics*
- *Software Switchable*
- *Runs Lotus 123 Graphics*
- *Run 132x44 column display*
- *Comply with FCC class 'B'*

COLOR CARD

- *16 colors*
- *RGB output*
- *Composite output*
- *640 x 200 resolution*
- *IBM Color card compatible*
- *One Year Limited Warranty*

$99

CLUB EGA GRAPHIC CARD

Quantity discounts available

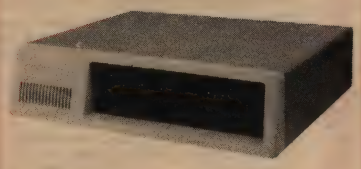
Made in U.S.A.
Complies with FCC

- *Fully IBM compatible*
- *16 colors 640 x 350 resolution*
- *256KB video memory*
- *Runs color/mono display*
- *Parallel Port*

$249

EXPANSION CHASSIS

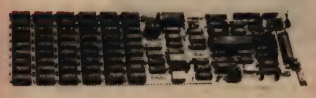
Put 8 extra slots into your PC



- *8 expansion slots*
- *4 half height drive space*
- *No wait-state design*
- *Round shielded cable*
- *Most compatible chassis on the market*

$408

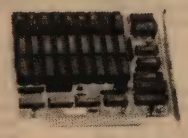
6-PAC COMPATIBLE



CLUB 384 *(for PC)*
- *0-384K Memory*
- *Clock/Calendar*
- *Parallel Port*
- *Serial Port*
- *Game Port and Software*
- *FCC class 'B' approved*

$88

MEMORY Short CARD



CLUB 576 *(for PC,Portable)*
- *0-576K Memory*
- *Short Card*
- *Supports 64K/256K DRAM*
- *Software*

$55

MULTIFUNCTION CARD FOR AT

CLUB 2000 *(for AT)* *OK*
- *0-2 MB Memory*
- *One Parallel Port*
- *1 Serial Port (2nd optional)*
- *Software*
- *Game Port*
- *Runs on 8 MHZ AT*

$179

Complies with FCC class 'B'
Made in U.S.A.

AT MEMORY CARD

CLUB 3000 **$155**
- *0-3 MB capacity*
- *No Piggy-back*
- *Split Memory addressing*
- *64K/256K RAM Chips*
- *One Year Limited Warranty*
- *FCC class 'B' approved*

OK

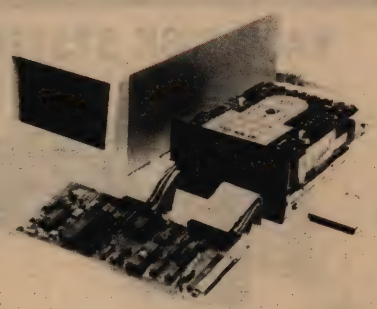
MINI I/O *for PC/XT*

- *AT version available*

- *Software*
- *2 Serial Port (2nd optional)*
- *Parallel Port*
- *Real time Clock/Calendar*
- *Half size card*

$89

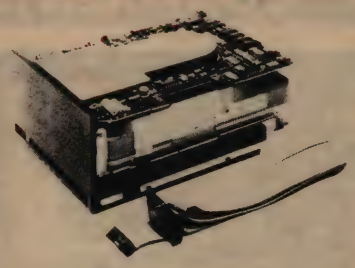
FAST HARD DISK FOR PC/XT AND COMPATIBLE



39MS Access time
- Auto Head Park
- Boot from Hard Disk
- 39 MS average access time
- Quality Seagate drive
- Special Western Digitlal Controller
- Software and Manual included

	INTERNAL	EXTERNAL
20MB Hard Disk Subsystem Seagate 4026	$659	$759
30MB Hard Disk Subsystem Seagate 4038	$759	$859
40MB Hard Disk Subsystem Seagate 4051 (available now)	$859	$959

Fast AT Hard Disk Drive



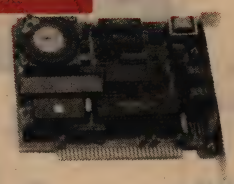
39MS Access time

- 39 MS access time
- Linear Voice Coil Activator
- Boots from Hard Disk
- Auto Head Parking
- Cables, AT sliding-rail and Software included
- One Year Limited Warranty

20 MB 4026	$549
30 MB 4038	$648
40 MB 4051	$699

EVEREX Modem-Hayes compatible

Made in U.S.A. • FCC class 'B' approved



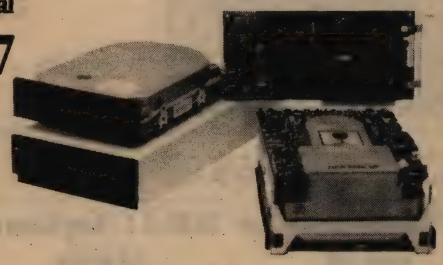
- Free Bitcom Communication Software
- 300/1200 Baud
- Half size/Half power
- Excellence for Long Distance calls
- One Year Limited Warranty

$128

Qty of 10+ $110

20/30 MB Hard Disk Subsystem

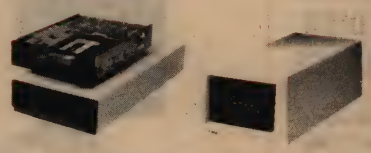
	Internal	External
20 MB	$399	$567
30 MB	$499	



- 20/30MB Seagate Hard Disk
- Western Digital Controller
- Boots from Hard Disk
- 65 MS access time
- Manual, Cables, Hardware and Software included

With Floppy Controller add $50

Back up your system



- FCC class 'B' approved
- 20/60 MB Backup
- Backup 10 MB in 2.5 Mins.
- Friendly Software
- Image Backup/ File by File restore
- One Year Limited Warranty

	20 MB cassette	60 MB cartridge
Internal	$580	$747
External	$680	$827

64K DRAM 150ns (9 pcs.)

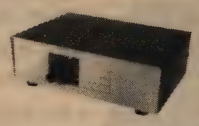
$9

256K RAM 150ns (9 pcs.)

120ns (add $9.00)

$27

PRINTER I/O MASTER



- Share One Printer by 4 Computers
- Or 1 Computer to use 4 different Printers
- Printer Spooler for IBM
- Cable included

$88

WEEKLY SPECIAL

	Qty of 2
Seagate 4051	$638
Fujitsu Floppy 360K	$80
Teac Floppy 360K	$85

AT Hard Disk/Floppy Controller

- AT-compatible
- Western Digital Chipset
- XT Size Format

$180

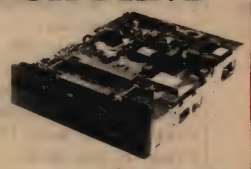
KEYBOARD FOR XT/AT

5151

- Western Digital WAH
- 16 Bit Bus
- Support 2 Hard Disk

$88

FLOPPY DISK DRIVE



- 360K
- Double sided
- Double density
- Half height
- TEAC/FUJITSU
- IBM grey color extra

$108

XT POWER SUPPLY PUT EXTRA POWER IN YOUR PC

Complies with FCC
- Reliable
- 135W
- Direct replacement
- One Year Limited Warranty

$88

Others

HARD DISK CONTROLLER

PC/XT Controller	$90
PC/XT Controller/Floppy Controller	$140
AT Controller/Floppy Controller	$160
Compaq 286 Hard Disk Controller	$188
Floppy Controller	$49
25 Pin Serial Cable	$18
IBM Type Printer Cable	$15
Split Power Y-Cable	$8
IBM AT Bus Extender Card (good for test & debug)	$30

CHIPS

EPROM 2764		$6
EPROM 27128		$8
Com Chip for AT 16450		$12
CPU 80286-8 MHZ PLCC	Plcc	$80
CPU 80286-10 MHZ PLCC	Plcc	$120

SOFTWARE

Communication BIT-COM	$49
Graphics DR. HALO	$49

ADD ON

Kits for Mini I/O, 2nd Serial Port	$25
Kits for CLUB 2000, 2nd Serial Port	$25

FREE MEMBERSHIP

CLUB AT INC.

46707 Fremont Boulevard, Fremont CA 94539

Quality and Volume is Our Business

All Sales Call **(415) 490-2201**

Fax No. 415-490-2687

University P.O. are welcome
Corporate Buyer call for Neil Mehta

Quantity Discount are available
Dealers are Welcome

ORDER BY MAIL: Check or Money Order. California add 6.5% Sales Tax

ORDER BY PHONES: C.O.D. Cashier Check,VISA,MASTER CARD,AMERICAN EXPRESS (3% Extra) or Approved Company P.O.

Terms: Due to our Low Price, all sales are final. All price are subject to change and some quantity may be limited and we reserve the Right to Substitute Equivalent Items Unauthorized Returns are subject to 10% Restocking Fee.

Call for RMA Numbers for Returns and Repairs. • All Price are subject to change without notice.

IBM,Hercules,Bitcom Xenix are Trade Marks of their Respective Company. Limited Warranty: 1 Year parts and 6 months Labor

CONTINENTAL PERIPHERAL UNLIMITED, INC.

QUALITY PRODUCTS WITH QUANTITY DISCOUNTS

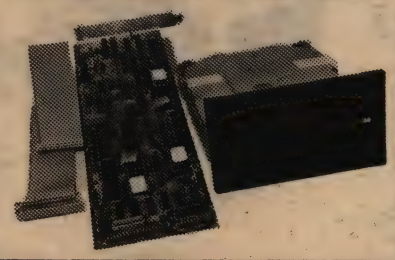
SUPER PC/XT SYSTEM

Call for Our Low Price

Includes: One Year Warranty

- With 640K on Board
- CPU: 16 Bit 8088 with Optional 8087 Coprocessor
- Expansion Slots: All 8 are IBM PC/XT Compatible
- Two Half Height, 360K 5¼" DS/DD 48 tpi Floppy Disk Drives and Controller
- Hi-resolution Monochrome Monitor with Color Card
- Multifunction Keyboard • AT Style Keyboard
- Runs PC-DOS/MS-DOS and CP/M-86
- 150 Watt Power Supply

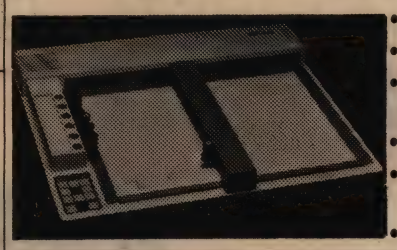
HARD DISK SYSTEM



- High Reliability • Controller Included
- Convert PC to XT Economically
- Fits into One Disk Drive Slot
- High Performance

20Mb	$495
33Mb	$695
33Mb (Hi Performance)	$895
44Mb	$995
10Mb (Removeable)	$1295

TAXAN 710S AUTOMATIC PLOTTER



- Maximum Pen Speed 10 inches/sec in axial direction
- 6 Automatic Pen Changing
- 6 Color Fiber Pens Provided (also uses most types of ceramic pens)
- 100% HP-GL Command Compatible
- 100% Pin Compatible Serial Port with HP-7475 Plotter
- Uses up to 11"x17" Paper

$745.00

SUPER PRINTER

- 120 cps Dot Matrix w/Letter Quality Mode
- Friction & Tractor Feed
- Panasonic 1091

$259.00

SUPER AT MULTI-FUNCTION CARD

- Serial Port
- Parallel Port
- 3Mb Expandable
- Game Port

$295.00

SUPER AT SYSTEM

- 640K Memory
- Hard Disk & Floppy Controller
- 1.2 Megabyte Floppy Disk Drive

Includes FREE 360K 2nd Floppy Drive **$1795.00**

IBM-AT Case ★ IBM-AT Keyboard ★ IBM-AT 200 Watt Power Supply

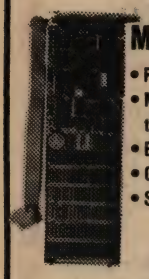
$99.00 $89.00 $149.00

SUPER PC XT PORTABLE SYSTEM

- NEW Design for Easy Carrying Plus It Is A Desk Space Saver.
- 1.7 Times Faster Than IBM PC/XT (by Norton Utility System Speed Checking Program).
- Uses V-20 CPU Chip
- 6 Slots (IBM Compatible)
- RGB and Printer Port
- 1 Floppy Drive (Hard Disk Optional)

CPU Price Only $1295.00

SUPER 384 Multifunction Card



- Parallel Port & Serial Port
- Memory Expansion from 0K to 384K (see below)
- Battery Back-up Clock
- Game Port • RAM Disk
- Spooler (Print)

$149.00 w/384K FREE Memory

DISK PLUS I/O

- One Card Consists of: Floppy Drive Controller Parallel & Serial Ports
- Consumes Only One Slot of Your IBM PC/XT or Compatible Computer

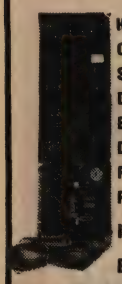
$99.00

HARD DISK CONTROLLER

- Hard Disk Controller for 5, 10, 20 and 33 Meg Hard Disks
- IBM PC/XT Hard Disk Controller Compatible

$159.00

ADDA MODEM



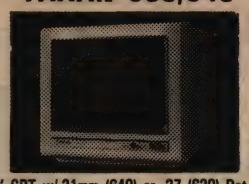
Hayes Compatible with Software	
Compatibility:	Bell 103 & 212A
Speed:	0-300 & 1200 BPS
Duplex Mode:	Full or Half Duplex
Busy Redial:	Auto Busy Redial
Data Format:	7 or 8 Bit ASCII
Parity Fmt:	Even, Odd or None
Port Adapt:	Com 1 or Com 2
Internal	$179.00
External	$199.00

TAXAN 555

- Ultra High Resolution for Color/Graphics
- BOB Compatible
- Resolution for Color Text (640 x 400)
- Resolution for Graphics (640 x 200)
- Use with Taxan 640

$195.00

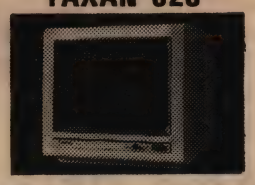
TAXAN 630/640



- 12" CRT w/.31mm (640) or .37 (630) Dot Pitch
- Ultra High Res (720 x 400) • Text Color Switch-grn/amb/white reverse & white on on blue • Incudes Cables

Call

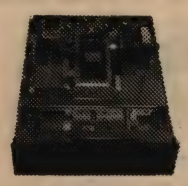
TAXAN 620



- Taxan High Quality • Text Switchable Grn & Amb, & Wht & Grn Rev. • 12" Dot in Line 640 x 262)
- RGB Input TTL Positive
- Includes Cable

Call

TEAC FLOPPY DRIVE



- 360K Formatted DS/DD Drive
- IBM PC/XT Compatible
- Half Height

$109.00

SUPER COLOR/ PRINTER CARD

- Everything IBM Color Card has, and more.
- Two Graphics Modes:
  4 Color - 320 x 200
  1 Color - 640 x 200

$99.00

Monochrome Graphic Card/ Printer Adaptor

- Fully Compatible with IBM PC Monochrome/Printer Adaptor
- Good for IBM Mono Monitor
- Printer Port can be Configured for Centronics
- Hercules Compatible

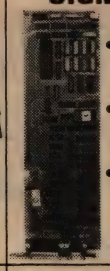
$99.00

POWER SUPPLIES

- Hi-Speed Fan
- Hrd Dsk Rdy
- Same Space as IBM PS

$79.00 135 Watt for use with PC/XT
$89.00 150 Watt for use with PC/XT
$149.00 200 Watt for use with PC/AT

SIGMA COLOR 400



- Ultra High Resolution for Color Graphics (720 x 400)
- Resolution for Graphics (640 x 400)
- Use with Taxan 640

$449.00

ACCESSORIES FOR IBM PC & COMPATIBLES

2764-25 EPROM Chips, each	4.00
Super PC/XT 640K 4 Layer Mother Brd.	295.00
INTEL 8087 Math Coprocessor	125.00
Parallel Card Interface	35.00
Super Floppy Drive Controller	45.00
Super Color Card	89.00
Taxan 115 Green Monitor (Composite)	109.00
Taxan 116 Amber Monitor (Composite)	119.00
Taxan 121 Green Monitor TTL	135.00
Taxan 122 Amber Monitor	139.00
Taxan TV Tuner (Composite)	79.00
Sam Sung TTL Mono Monitor	99.00
PC Mouse	CALL
Panasonic 1092 Printer (180cps)	CALL
Panasonic 1093 Column Printer	CALL
EPSON FX-85 Printer	Call
DYNAX DX-15 Printer	Call
Printer Stand for 80 Column	25.00
Keyboard Extension Cord	10.00
Printer Cable	15.00
Serial Cable	25.00

60Mb Tape Back-up System

- 60Mb High Speed Streamer Back-up Tape
- Qic-02 Type • Back-up File by File or Image
- Conventional Size Digital Cassette
- Tape Back-up Controller and Software Included
- Menu Driven
- One Year Warranty

$795.00

MINI I/O CARD

- Parallel, 1 Serial/Game Ports & Clk Calendar
- 4x4 Fits Short Slot
- IBM PC Compatible
- Comes with Ramdisk, Printspooler & other Utilities and Cables

$99.00

THE KEYBOARD

IBM PC/XT Compatible

$79

ADDA 5151 KD

Highly reliable keyboard w/Cap & Num Indicator. Keytronic KB5151 look-a-like **$89**

UNINTERRUPTABLE POWER SUPPLY

- Power Failure Interrupt Signal to Computer
- Back-up Power for 15 Minutes
- Noise Surpression
- Surge Protection

$199.00

Prompt delivery, usually shipment within 48 hours (except personal check orders). 25% deposit required for C.O.D. orders.
We welcome major educational institutions and PC users' groups to establish open accounts (P/O) status with us to facilitate shipment of orders. Write or call for details.

Prices quoted above do not include UPS shipment charges.
Prices subject to change without notice.
California residents add 6.5% sales tax.

Business hours: Mon.-Sat. 9:00am - 5:30pm

IBM PC is a registered trade mark of IBM Corp.

TAXAN is a registered trade mark of TAXAN Corp.

Continental Peripheral Unlimited, Inc.

2048 WEST PEPPER STREET
ALHAMBRA CALIFORNIA 91801
818-282-3121

PRICE BREAKTHROUGH

NEW LOW PRICES

FAST DELIVERY—TOP QUALITY

ORDERS ONLY **CALL 1-800-435-2266**

Complete IBM* Compatible System

681.00

ASSEMBLED AND TESTED
FCC APPROVED

INCLUDES:
- IBM PC-XT* Type Slide-Out Case
- Power Supply
- 5150 AT Style Keyboard
- Mother Board expandable to 640K (with 256K installed)
- Monochrome Graphic Printer Board
- Floppy Controller Board
- Teac ½-height drive DS/DD 360K
- 12" Samsung Monitor TTL amber or green
- MS DOS 2.11 with Manuals
- System Parking Box

With 2 Drives 776.00

ADD ON BOARDS IBM* COMPATIBLE

Any of these components may be purchased separately.

Specialists in School Systems, Universities, Professionals, and Business.

TURBO MAIN BOARD
- 16-BIT 8088-2, 8 MH_Z CPU
- Clock speed 1.7 times, faster than normal XT
- Memory expandable to 640K

#MG-B128 . . . . . 150.00

MULTI I/O CARD
- Built-in Floppy Controller that can drive two floppy drives
- Two RS232 Serial Adapters
- Timer Port
- Parallel Printer Port
- Joystick Adapter

#M10B132 . . . . . 99.00

MONOCHROME GRAPHIC PRINTER BOARD
- Built-in Parallel Printer Port
- Text: 25 line x 80 column; Graphics: 720 x 348 resolution
- TTL High Resolution Output

#MGPB103 . . . . . 79.00

GAME I/O BOARD
- Two Joystick Game I/O Ports

#G10B107 . . . . . 19.00

COLOR GRAPHICS BOARD
- RGB and Composite Port
- Light Pen Interface
- Graphics 320 x 200 (color); 640 x 200 (BW)
- Text 25 x 80

#CGB104 . . . . . 69.00

MULTIFUNCTION BOARD
- Expandable to 384K RAM
- Serial Port, Game Port
- Parallel Printer Port
- Clock Calendar with battery back-up
- Manuals and Cables

#MFB102 . . . . . 89.00

FLOPPY DISK CONTROLLER
- Drives two internal drives
- Includes cable
- IBM PC* Compatible

#FDCB105 . . . . . 35.00

SLIDE-OUT CASE FOR IBM XT*
- Same as CSEC600 except slide-out

#CSEC600-1 . . . . . 29.00

MINI POWER CENTER
Power on/off controls for six of your peripheral hardware, mounted in one control center—with surge protection, swivel base and LED indicators.

#MPCP100 . . . . . 49.00

CHALLENGER MODEM
- Operates at 300 Baud and 1200 Baud
- Bell 103 and 212A Compatible
- Hayes Compatible
- Auto answer, dial and redial
- External Speaker for monitoring calls
- AC adapter supplied

#STMB120 . . . . . 159.00

640K RAM EXPANSION BOARD
- Expanded RAM to 640K
- Fully Buffered

#REB113 . . . . . 49.00

CASE FOR IBM XT*
- For IBM XT* Boards and 5¼" Disk Drive
- Hinged Cover for easy access to boards

#CSEC600 . . . . . 29.00

5050 IBM* TYPE KEYBOARD
- Caps and Number Lock

#KBD150L 49.00

5150 XT* KEYBOARD
- Looks like At-large return, shift and control keys

#KBD150M 69.00

IBM* COMPUTER TO PRINTER CABLE
(DB 25 pin male to 36 pin Centronics male) 6 ft.

#CB8510 . . . . . 7.99

COMPUTER TO MODEM CABLE
(DB 25 pin male to DB 25 pin female) Pins 1-8, 12, 20, 22 wired. 6 ft.

#CB8515 . . . . . 4.99

6-OUTLET POWER STRIP
With 15 amp surge protector, 6 ft. cord. U.L. rated.

#SP103 . . . . . 11.99

ULTRA-COMP

2600 N. Broadway, St. Louis, MO 63102
Dealer Inquiries Welcome 1-314-436-0396

1-800-435-2266

Personal and Company Checks Accepted (on mail orders)
Customer freight and handling F.O.B. St. Louis, MO
Non Credit Card orders shipped U.P.S. C.O.D.

VISA MasterCard

Prices Subject to Change
Minimum Order
$25.

*IBM, IBM PC, IBM PC XT, IBM XT are Trademarks of International Business Machines

We'll Meet or Beat All Advertised Prices...We're the Super Discount Wholesaler

CALL TOLL FREE
1-800-233-6035
FOR ORDERS ONLY

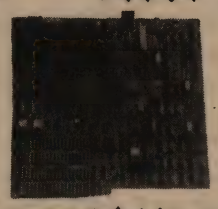
BTE COMPUTERS INC.

FOR INFORMATION ON DEALER PRICING CALL
602-867-8962

SUPER PC AT

TOTALLY *IBM AT HARDWARE & SOFTWARE COMPATIBLE

20 MEG SEAGATE With Controller $388



- 1 MEG ON BOARD (OPTION) MOTHER BOARD
- 6 or 8 MHZ SPEED SWITCHABLE
- 80286 MICROPROCESSOR
- 80287 COPROCESSOR (OPTIONAL)
- 512K STANDARD MEMORY
- 8 I/O EXPANSION SLOTS (OK) $588.00
- SUPER AT KEYBOARD ..... $ 78.00
- SUPER AT CASE ..... $ 78.00
- SUPER AT 200 WATT POWER SUPPLY. $109.00
- 2.5M MULTI-FUNCTION CARD (OK) $189.00
- HARD DISC. FLOPPY CONTROLLER $289.00
- 1.2 MEG FLOPPY DRIVE $128.00
- EGA CARD $269.00

30 MEG SEAGATE With Controller $519

FLOPPY DISC DRIVES $78.00

TEAC $94 Mitsubishi $85

SUPER COMPATIBLE PC/XT

TOTALLY *IBM XT HARDWARE & SOFTWARE COMPATIBLE

- 640K or 256K MOTHER BOARD
- 8088 CPU, 4.77 MHZ, 8087 OPTIONAL
- 8 I/O EXPANSION SLOTS, 7 ROM EXPANSIONS
- RUNS ALL XT SOFTWARE - FLIGHT SIMULATOR, LOTUS, SYMPHONY, DB III, AUTO CAD II and AUTO CAD 3D W/(OK) $108.00

NEW! 8 MHZ HYPER BOARD

- 640K MOTHER BOARD
- 6 ROM SOCKETS
- 4 LAYER (LOW NOISE EPOXY) BOARD
- 8 EXPANSION SLOTS
- 8088 (8087 OPTIONAL)
- (O)K RAM ONLY $138.00

AT HARD DISCS

DRIVE MFG	FORMATTED CAPACITY MB	ACCESS SPEED MS	PRICE
SEAGATE	21	65	$ 395.00
SEA/CDC*	21	40	$ 549.00
SEA/CDC*	30	40	$ 598.00
SEAGATE	40	40	$ 749.00
MICROPOLIS	70	28	$1388.00
MAXDORF	120	30	$2998.00

XT HARD DISCS W/ Controller

DRIVE MFG	FORMATTED CAPACITY MB	ACCESS SPEED MS	PRICE
SEAGATE	10	85	$ 388.00
SEAGATE	21	65	$ 388.00
SEAGAT	21	40	$ 688.00
SEAGATE	30	40	$ 519.00
SEAGATE	40	40	$ 849.00
CDC	70	28	$1599.00
MAXTOR	120	30	$3288.00

PC/XT INTERFACE CARDS

- COLOR GRAPHIC DISPLAY CARD $71.00
- 384K MULTIFUNCTION (OK) $78.00
- MONOGRAPHIC W/PRINTER $73.00
- MULTI-I/O CARD $68.00
- PARALLEL PRINTER CARD $25.00
- SERIAL CARD $28.00
- GAME PORT ADAPTER $25.00
- EPROM WRITER CARD $89.00
- 576K RAM CARD (OK) $48.00

ACCESSORIES

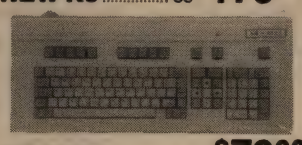
- REGULAR JOYSTICK $19.00
- FANCY JOYSTICK $28.00
- POWER STRIP W/SURGE ..... $ 6.88
- 100 FLOPPY DISK FILE ..... $ 8.00
- 70 FLOPPY DISK FILE ..... $ 2.00
- IBM RF MODULATOR ..... $ 9.95
- PRINTER CABLES $14.95
- SERIAL CABLE ..... $ 8.88
- FLOPPY DISK DRIVE CABLE $15.00
- OTHER CABLES ..... CALL
- GENDER CHANGER -M-M, M-F, F-F... $ 5.00
- SERIAL AB SWITCH $39.00
- PARALLEL AB SWITCH $34.00
- ABX SWITCH $49.00

POWER CENTERS

- KING TECH $78.00
- SCOOTER W/ SWIVEL STAND $78.00
- COMPATIBLE - MULTICENTER - $59.00

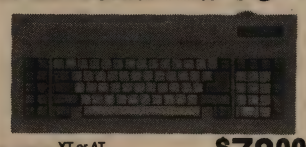
KEYBOARDS

NEW K9 ..... FCC $179.00



KB 5151 ..... FCC $79.00

K7 KEYBOARD ..... FCC $78.00



5060 XT or AT KEYBOARD ..... FCC $78.00

5150 KEYBOARD (HIGH QUALITY) $46.00
FCC APPROVED $58

XT CASE (FLIP TOP) PRICE SLASH $27.00

SLIDE CASE $29.00

135 WATT XT POWER SUPPLY $59.00
FCC $69

MONITORS

- AMDEK 310 AMBR ..... $ 147.00
- AMDEK 600 COLOR ..... $ 388.00
- AMDEK 722 COLOR HI RES ..... $ 488.00
- AMDEK 730 COLOR HI RES ..... $ 536.00
- NEC MULTISYNC RGB ..... $ 598.00
- MITSUBISHI RGB ..... $ 338.00
- PRINCETON HS-12 ..... $ 466.00
- ROLAND HI RES COLOR ..... $ 347.00
- SAMSUNG AMBER COMP ..... $ 88.00
- SAMSUNG GREEN COMP ..... $ 78.00
- SAMSUNG TTL ..... $ 98.00
- SONY ULTRA COLOR 12" ..... $ 477.00
- SONY HI RES COLOR 13" ..... $ 417.00
- SONY COLOR 1311 TV ..... $ 497.00
- TAXAN GREEN 115 COMP ..... $ 119.00
- TAXAN AMBER 116 COMP ..... $ 119.00
- TAXAN GREEN 121(TTL) ..... $ 137.00
- TAXAN 620 RGB COLOR ..... $ 388.00
- TAXAN 630 COLOR MTR ..... $ 487.00
- TAXAN 640 COLOR MTR ..... $ 517.00
- ZNTH ZVM1220 AMB COM ..... $ 98.00
- ZNTH ZVM122A AMB COM ..... $ 88.00
- ZNTH ZVM1230 GRN COM ..... $ 98.00
- ZNTH ZVM1240 AMB (TTL) ..... $ 142.00
- OTHER MONITORS ..... CALL

MONITOR STAND $11.95

NEW SONY 13"
HI RES COLOR MONITOR SPECTACULAR PICTURE
$417
SONY WITH REMOTE CONTROL/TV
$497
SONY 12" ULTRA HI RES COLOR
$477

Mitsubishi
1330A RGB High Res (600 x 240) MONITOR
Fantastic Price!
$339
with *Apple 2E RGB Card $399 and Monitor Swivelstand

NEW TTL MONITOR HI RES
$99
with swivelstand $109

SPECIAL LIMITED TIME ONLY! Amber or Green Composite Monitor Only
$88
with swivelstand $98

* APPLE COMPATIBLE PRODUCTS

DISK DRIVE (II+, IIe)

BEST BUY IN TOWN, HALF HEIGHT DIRECT DRIVE 100% *APPLE COMPATIBLE, 180 DAYS WARRANTY

- SUPER-6 ..... $ 99.95
- MITAC $129.00
- 2C $139.00

INTELLIGENT EPROM WRITER

CAN BURN 2716, 2732, 2764, 27128, 27256 Vpp AUTO. SET TO 25V, 21V, OR 12.5V. FAST ONLY 50 SECONDS FOR 2764 CAN COPY, VERIFY, READ, FORM DISK FILE, OR EPROM. FULL CP/M UTILITY SUPPORT FOR DEVELOPMENT. HIGH QUALITY WITH 1 YEAR WARRANTY. WITH 1 TEXTOOL...$169.00 WITH 4 TEXTOOL...$199.00 WITH 10 TEXTOOL...$259.00

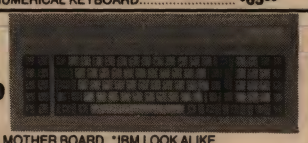
2E NUMERICAL CASE, KEYBOARD

- APL 2E REPLACEMENT CASE $48.00
- APL 2E REPLACEMENT KEYBOARD $58.00
- APL 2E REPLACEMENT NUMERICAL CASE $65.00
- APL 2E REPLACEMENT NUMERICAL KEYBOARD $65.00

APL 2+ Replacement Case, Numerical Case, Keyboard

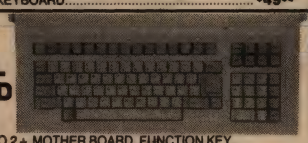
- APL 2+ REPLACEMENT CASE $38.00
- APL 2+ REPLACMENT KEYBOARD $38.00
- APL 2+ NUMERICAL CASE $49.00
- APL 2+ NUMERICAL KEYBOARD $49.00

2E EXTERNAL KEYBOARD



DIRECTLY PLUGS INTO MOTHER BOARD, *IBM LOOK ALIKE FUNCTION KEY, ONE KEY BASIC, NUMERICAL KEYPAD, CURSOR CONTROL KEY, USER FUNCTION KEYS. ONLY $88.00

2+ EXTERNAL KEYBOARD



DIRECTLY PLUGS INTO 2+ MOTHER BOARD. FUNCTION KEY, CURSOR KEY, NUMERICAL KEY PAD FLIP UP KEYBOARD STAND, ONE KEY BASIC. FOR ONLY $79.00

APL. 2e NUMERICAL KEYPAD

HIGH QUALITY, EASY TO INSTALL, DIRECTLY PLUGS INTO 2e MOTHERBOARD, EASY FOR NUMERICAL ENTRY ONLY $39.00

SUPER DELUXE JOYSTICK

HIGH QUALITY, SPEED, SENSITIVITY, MODE CONTROL, BIG FIRING BUTTONS, CENTERING ADJUSTMENT ONLY $49.00
FANCY JOYSTICK $29.00

APL. BOARDS, CABLES, & PARTS

- NEW 2E COMPATIBLE BOARD $238.00
- HARD TO GET (2+, 2e) ICS ..... CALL
- REBUILD 2+, 2e MOTHER BOARD ..... CALL
- 16K RAM CARD WITH CABLE ..... $ 29.00
- Z-80 CARD ..... $ 29.00
- 80 COLUMN/64K CARD (2e) ..... $ 39.00
- DISK CONTROLLER CARD ..... $ 39.00
- 80 COLUMN CARD (2+) ..... $ 49.00
- SUPER SERIAL CARD ..... $ 68.00
- EPROM WRITER CARD ..... $ 58.00
- RGB/64K CARD ..... $ 89.00
- 1 MEG MEMORY EXPANSION CARD (NEW) $ 89.00
- PRINTER CARD WITH 64K BUFFER ..... $ 75.00
- GRAPHICS PRINTER CARD ..... $ 39.00
- DISK NOTCHER ..... $ 5.95
- *APPLE EXTENDER CARD ..... $ 24.95
- *APPLE BREAD CIRCUIT BOARD ..... $ 14.95
- 5A REPLACEMENT POWER SUPPLY ..... $ 44.00
- PRINTER CABLE ..... $ 13.00
- RS-232 CABLE ..... $ 15.95
- CENTRONIC TO CENTRONIC CABLE ..... $ 19.95
- APL 2+ KEYBOARD CABLE ..... $ 19.95
- RCA VIDEO CABLE ..... $ 1.95
- RF MODULATOR/CABLE, SWITCH ..... $ 9.95
- 5¼" DISKETTE FILE. (70 PCS) ..... $ 8.95
- 5¼" DISKETTE FILE. (85 PCS) ..... $ 9.95
- POWER CENTER (SCOOTER) ..... $ 59.00
- KENSINGTON MULTICENTER ..... $ 79.00
- EPSON PRINTER CARD ..... $ 29.00
- 80/40 COLUMN SWITCH ..... $ 3.95

INTELLIGENT EPROM WRITER
WITH 1 TEXTOOL $169.00
WITH 4 ..... $199.00, WITH 10 ..... $259.00

1 MEG. MEMORY EXPANSION (OK) $89.00

IC TESTER CARD...TESTS ALL COMMON ICS SHORT-CIRCUIT PROTECTION $99.95

MOUSE FOR APL II+, IIe...PLUGS DIRECTLY INTO GAME PORT. 180 DAY WARRANTY...$79.95

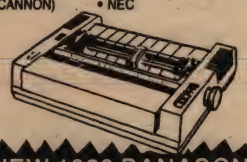
RGB/64K CARD CAN RUN *APPLE OR *IBM MONITOR FOR ONLY $89.00

IDEAL JOYSTICK EXPANDER...JOYSTICK EXPANDS UP TO 5 PORTS $29.95

PRINTERS

"CALL FOR THE BEST PRICES"

- BROTHER
- CITIZEN
- CORONA LASER
- DAISY LASER (CANNON)
- EPSON
- HP LASER JET
- JUKI
- OKIDATA
- NEC
- PANASONIC
- SEIMENS
- SIVER REED
- STAR

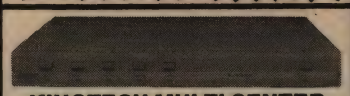


NEW 1080 PANASONIC
DRAFT / LETTER QUALITY / COMPRESSED SWITCH SELECTABLE
$209 *IBM or *APPLE GRAPHICS
with printer stand..... $218.00

STAR/LV-1210
DRAFT / LETTER QUALITY
BEST BUY AROUND
$189 *IBM GRAPHICS
with printer stand..... $198.00

PRINTER STAND
$14.95
with any Printer Purchased $10.00

Toshiba 1100 +
(2 DRIVES 640K)
LAPTOP
CALL FOR PRICE
Toshiba 3100
AT LAPTOP



KINGTECH MULTI CENTER
$78
- Rated Voltage ..... 120 Volts AC
- Rated Current ..... 12 AMPS
- Noise Rejection Frequency ..... 600 kHz to 25 mHz
- Attenuation ..... 45dB to 55dB
- UL Listed ..... Swivel Base

PLOTTERS

- CAL COMP 1043 GT $7588.00
- EPSON HI PLOT 80 ..... $ 388.00
- HSTN INST DMP42 ..... $2588.00
- SWEET PEA 600 ..... $ 777.00

*IBM is a registered Trademark of International Business Machine Corporation

MAIL TO BTE Computers, Inc.
14644 N. CAVE CREEK #6 • PHOENIX, AZ 85022
OR P.O. BOX 30705C • PHOENIX, AZ 85046-0705 • PHONE (602) 867-8962

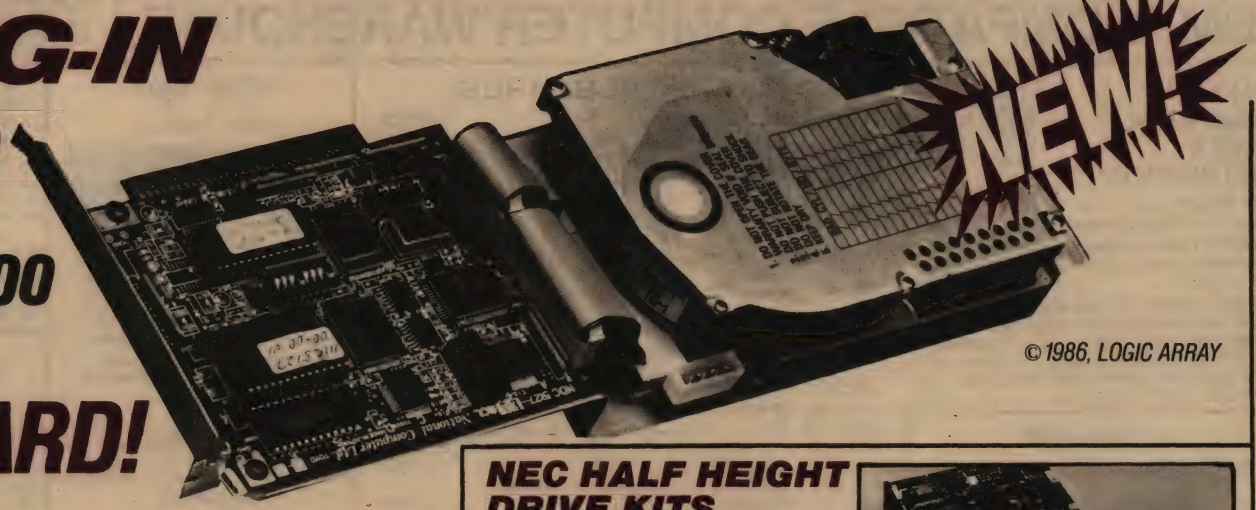
*APPLE is a registered Trademark of Apple Computer, Inc.

MASTER CHARGE, VISA, ARE WELCOME. (3.9% C.O.D.) $5.00 MINIMUM SHIPPING & HANDLING. NOT RESPONSIBLE FOR TYPOGRAPHICAL ERRORS. All Products Subject to Availability or Stock on Hand. All Prices are Subject to Change Without Notice! All Sales are Cash Discount Prices! Refunds are Credited Only

CALL MONDAY THRU SATURDAY!

CALL TOLL FREE 1-800-233-6035 FOR ORDERS ONLY

21 MEGABYTE HARD DISK ON A PLUG-IN CARD



$449.00 MEGACARD!

MEGACARD! *21 megabyte hard disk drive on a plug-in board that instantly converts any PC or compatible to an XT.*

And ***MEGACARD!*** *enables PC and XT users with a hard drive to run two drives on a single slot.* ***You get an extra expansion slot!***

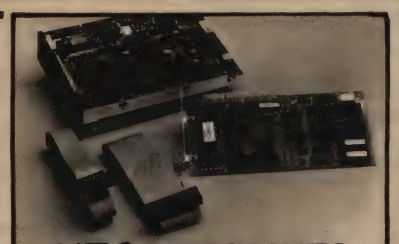
MEGACARD! *combines the NEC "zero defect" program with state-of-the-art technology. This "drive-on-a-card" installs in seconds.* ***Just plug in and power up!***

MEGACARD! *delivers:*

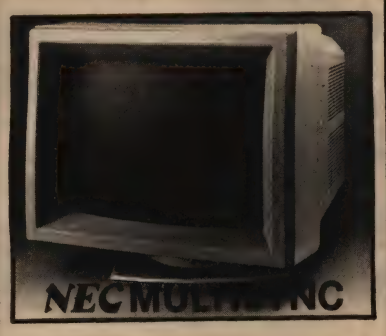
- *NEC technology*
- *"Zero defect" reliability*
- *Fast, easy plug-in installation*
- *Two year parts and labor guarantee.*

NEC HALF HEIGHT DRIVE KITS

All drives include controller and cables.
5¼" 20MB D5126 . . . . 389.00
5¼" 40MB D5146 . . . . 599.00
(40MB includes Disk Manager)
5¼" 60MB (RLL) 699.00



NEC DRIVE KITS



NEC MULTISYNC

CHIPS

64K DRAMS
SET OF 9 . . . . . 12.50
256K DRAMS,
SET OF 9 . . . . . 65.00
C8087 . . . . . 125.00
C8087-2 . . . . . 179.00
C80287-3 . . . . . 225.00
V20 8MN 10.95

MONITORS

MULTISYNC JC1401P3A
CALL FOR BEST PRICE
RGB
TTL GREEN
TTL AMBER
CALL FOR BEST PRICE

EGA

ATI MEGA GRAPH PLUS 295.00
RIX EGA PAINT SOFTWARE 52.00

$52.00
EGA PAINT

SUPER SPECIALS

NEC HALF HEIGHT DRIVE KITS

40 MEGABYTE $599.00
5¼" 40MB HF. HT.
D5146 . . . . . 599.00

60 MEGABYTE $699.00
5¼" 60MB HF. HT.
(RLL) 699.00

- *1 year warranty*
- *Controller cables included*
- *Boots from hard disk*
- *Instruction manual*

HARD DISK CONTROLLER $99.00 *(Limited Quantities)*

DATA TECHNOLOGY
DTC5150CX . . . . . 99.00 (WHILE THEY LAST)

From the legal beagles.
Prices and availability subject to change without notice.
Prior authorization required on all returns.
All returns subject to restocking charge.
All normal manufacturers' warranties apply.
NEC, MultiSync, EGA Point, & Data Technologies are registered trademarks of their respective companies.

IT'S EASY TO ORDER

- ***We ship immediately*** *when you pay by Visa, MasterCard, American Express, or Money Order. Allow 3 weeks for personal or company check.*
- *No surcharge on Visa, MasterCard, or American Express.*
- *Minimum $5 shipping and handling up to 3 lbs. in Continental US only. On other orders, call for information.*
- *All orders insured.*
- *No sales tax on orders outside California (California residents add 6% sales tax.)*

When you want the best peripherals money can buy with expert technical support you'll just have to settle for paying ***less.*** ***That's*** *logic. From Logic Array.*

LOGIC ARRAY
P.O. Box 3799
Costa Mesa, CA 92628-3799

CALL NOW AND WE CAN SHIP TODAY!

800-22-LOGIC
800-843-0426 (in Calif.)

HOURS: Mon.-Fri. 7a.m.-5p.m. PDT

FOR EXPERT TECHNICAL SUPPORT
CALL 714/650-6700

Logic Array

IBM™ COMPATIBLE COMPUTER WAREHOUSE

COMPUTER BARGAINS
SAVE 40% to 80% OFF RETAIL

IBM XT™ COMPATIBLE PARTS MOTHERBOARDS

STD XT-640 640K Mem Max., 4.77 mHz, Operation completely tested with 0 mem.$109

TURBO XT-640 640K mem max. 4.77/8 mHz, selectable 2-layer board, completely tested with 0 mem.....$129.75

SUPER TURBO XT-640 640K mem max., 4.77/8 mHz selectable 4-layer board, completely tested with 0 mem.....$154.75

AT MOTHERBOARD 1 Meg; on board clock, ROM BIOS incl., exact IBM look-alike & AT compatible, w/OK installed.....$599

ATTAK-286
- 80286 Running @ 8 mHz
- 80287 Socket
- VLSI Technology
- 1 Meg Memory on Board
- Phoenix ROM BIOS
- On Board Battery

$559 w/OK Installed

HARD DISK SYSTEM
20 meg half-high w/controller.....$419.75
10 meg drive & controller.....$319.75
20 meg drive only.....$329.75
10 meg drive only.....$219.75
Controller with cables.....$119.75
20 meg AT drive (40Msec).....$535
30 meg AT drive (40Msec).....$595
40 meg AT drive (40Msec).....$645
20 MB file card internal by W. Digital plug in hard drive uses expansion slot.....$589

FLOPPY DRIVES
DSDD—
40 TRACK DISK DRIVES
All Half-Height

Qume 142.....$89.75
Okidata GM33158.....$79.75
Tandon 50-2.....$79.95
Maple.....$89.75
Fujitsu or TEAC.....$92.75
1.2 Mg TEAC.....$139.75

POWER SUPPLIES
135 Watt.....$69
150 Watt.....$79
200 Watt.....$119
IBM PC-JR replacement.....$19.95
Atari replacement.....$9.75
5V @ 35 AMP.....$65

EXTERNAL DRIVE CASE & POWER SUPPLY
- 75 W Power Supp.
- Drive Power Connect.
- IBM Style

$109

DIMENSION EXT. POWER SUPPLY FOR DISC DRIVES
$39.75

MONITORS

Magnavox TTL.....$96.75
Magnavox Composit...$79.75
Nec Multisync ultra hi-res. EG color.....$549
Samsung Monochrome TTL.....$89.75
Samsung Composite.....$69.75
Cemtre TTL.....$98.75
Panasonic TTL.....$119.75
Thompson RGB 560-240 Res.....$295.00
Thompson RGB 640-240 Res.....$395.00
Texas Instrument High Res Computer Video Green Monitor.....$49.95

IBM CLONE TECH MANUAL
Did you buy a clone machine and didn't get any kind of operations manual? We put together an extensive manual that tells you how to hook everything up, how it works & troubleshooting techniques. Covers both XT and Turbo-XT systems. Complete w/schematics.....$24.95

AT CLONE BUILDERS MANUAL.....$24.95

BPS Business Graphics Program for IBM w/charts & software in 2 volumes.....$24.75

THE PRIME PLOTTER
BY PRIME SOFT CORP.
A plotting package for most applications.....$29.95

RAM TEST PROGRAM
A must for all IBM clone assemblers. Tests full 640K of memory and prevents you selling computers with parity problems. Saves you money!.....$9.95

Swivel Base N/Tilt
MONITOR STAND
$11.95

SUPER SURGE HASH FILTERS
$14.75
6 Outlets, Fused, Mov. & LC Circuits

IBM ADD ON BOARDS

STOCK#	DESCRIPTION	PRICE
FDC-501	Floppy disk controller w/cable—4drives	$36.75
FDC-507	Floppy Cont. w/serial, parallel & clock	$99
HDC-515	Hard disk controller w/cables	$119.75
VID-401	Color Graphics Cards, IBM Specs	$65
VID-405	Magic Video card w/TTL, RGB & Composite outputs 640x400 color, 640x352 monochrome	$185
VID-408	Hi-Res mono/graphics w/printer port Hercules compatible	$85
SIO-250	Serial port card (second serial opt.)	$35
PIO-255	Parallel printer card	$29
MFC-110	Short I/O, parallel, serial, clk/cal	$99
MFC-100	Multi-funct. w/para., ser., clk/cal & 384K Exp. no mem. installed, Software	$90
MFC-120	576K memory expansion board (short card)	$59
CAB-525	Bus Receiver & driver boards for Exp. chasis	$149
HDC-516	Floppy & Hard Drive controller board for AT	$255
MFL-150	1.5 MB Multifunctional board with serial, parallel, game port for AT	$269
VID-425	Enhanced Graphic Adapter w/256K, parallel printer port by Everex	$269
MDC-517	Adaptec Board 2070A RLL hard disk controller. Will also format STD 20 Meg drive to full 30 Meg	$179.75
HDC-526	At controller for hard disk only by NCL, 16 bit bus	$169
VID-402	Color graphics card w/ printer port By Zucker	$89
VID-409	Hi-res Zucker monographic card w/printer port 640K RAM built in	$94.75

KEYBOARDS
For AT or XT
Switch Selectable

5150 Type.....$79.95
5151 Type.....$89.75
Maxi Switch AT/XT.....$59.75
PC/XT Look-Alike.....$54.75

PC/XT PORTABLE CASE
Keyboard, 135 Watt Supply, Monitor, & All Hardware.
- Green TTL Monitor
- Keyed Power Switch
- Hardware Reset Switch
- Mounts Standard XT Motherboard
- 3 Disk Drive Slots

$499

MODEMS
Everex 300-1200 internal
Hayes Compatible.....$139.00
Lytek 300/1200 External..$159.00

TAPE BACK-UP
MEMTEC 20 MEG.....$575
INTERDYNE 10 MEG.....$$295
ARCHIVE60 MEG.....$850

COMPUTER CASES $39.95
IBM XT TYPE LOOK-A-LIKE
FLIP TOP OR SLIDE IN TYPE
- Slide-Off Cover or Flip Top
- Requires Side Switch Power Supply
- For Exact IBM Foot Print Boards Only
- 8 Slots in Rear

AT JUNIOR STYLE CASE
FOR YOUR XT MOTHERBOARD
- Same Dimensions as XT Case
- LED Indicators & Key Lock
- Complete mounting hardware

$69.95

AT COMPATIBLE CASE
Includes Keylock
89.95

CABLES FOR IBM SYSTEMS

CAB-800	IBM Printer cable (Centronics)	$10
CAB-825	Serial cable, 6', DB25 male to male	$10
CAB-835	Serial cable, 6', DB25 male to fem	$10
CAB-600	RGB Ext. cable, 6', DB9 male to fem	$10
CAB-500	6' keyboard ext. cable	$5.75
CAB-501	6'keyboard cable	$5.75
CAB-550	6' composite video cable	$3.75
CAB-600	Special 8 pin RGB to DB9 cable	$13
CAB-300	6' IBM power cable	$3
CAB-875	IBM/AT serial port cable	$20
CAB-400	Dual 5¼" disk drive cable	$17
CAB-425	Hard disk cable set	$10.75
CAB-450	AT cable set (hard & floppy)	$25
CAB-99	Monitor cable DB9 male to female	$4.75

BASIC TURBO SYSTEM
$699
- Intel 8088-2 (4.77 & 8 mHz)
- Compatible Keyboard
- 1 Half-Height Floppy Drive
- 640K Ram
- 135 Watt Power Supply
- Monochrome TTL Monitor (High Res.)
- 8 Expansion Slots
- PAR., SR. Ports

IBM® AT CLONE SYSTEM
$1989
- 80286 Process @ 8 mHz
- 640K RAM (1 meg. max)
- 20 Meg hard drive
- Single floppy drive
- Monochrome graphics
- I/O Ports
- High res monochrome monitor

TURBO XT PORTABLE SYSTEM
$1499
- Super Turbo 4 layer mother board
- 4.77 or 8 mHz Operation
- 2 DSDD Floppy Drives
- Monographic or Color
- Hi-res. TTL or Comp Monitor
- Serial, Parallel, Game, CLK CAL
- Compatible Keyboard
- 640K RAM

SUPER XT TURBO SYSTEM
$1589
- 20 MEG Hard Drive
- Super Stable 4-layer motherboard
- 4.77 or 8 mHz Operation
- DSDD Disc Drive
- Color Graphics card
- Composite video monitor
- Serial, Parallel, Game, CLK CAL
- AT Style Keyboard
- Internal 1200 Baud Modem
- 640K RAM

XT-TURBO SYSTEM
$1289
- 10 Meg Drive
- 2 Layer Motherboard—640K
- 4.77 & 8 mHz Operation
- DSDD Disc Drive
- Color Card & Composite Monitor
- Serial, Parallel Ports
- 5150 Keyboard
- 640K RAM

All the systems with hard disk are fully tested, loaded and configured with easy to use menu system having direct access to MS-DOS 3.2, MS-DOS Tutorial, Basic/Basica, Spread Sweet, Zip Etc.

All computer systems have one year warranty on parts and 90 days on labor / No hidden extras
DOS 3.2 operating system / Fully IBM PC-XT or AT compatible

IBM PUBLIC SOFTWARE
$3.75/Disk

1 PC-File (Data Base)
2 PC-Finance (Accounting)
3 PC-Checkbook
4 PC-Modem (Communications)
5 PC-Spreadsheet
6 Home Finance Program
7 Free Calc — Spreadsheet
8 PC-Basic (runs Basic prog.)
9 PC-Calculator
10 Point of Sale Program
11 Misc. DOS Super Utilities
12 8087 Sampler Programs
13 Misc Appl., Music, Dates
14 Poor Man's Mouse
15 PC DOS Help
16 Word Proces. for Kids
17 Time & Money - Finance Mngr.
18 PC-Musician
19 Property Mngr. (DBase II)
20 Silly Diagnostics
21 Micro Accounting System
22 File Manager
23 A Cheap Assembler, RAM Disk
24 PC Graphics 1
25 PC Graphic 2
26 Portfolio Evaluation System
27 Newkey - Keyboard Program
28 Star Trek Programs
29 Games 1
30 Games 2
31 Basic Games
32 Basic Games
33 Misc Basic Games
34 Galaxy Trek w/Graphics
35 CPU Speed Test
36 Benchmarks
37 Toolbox 1 — DOS Utilities
38 Toolbox 2 — DOS Utilities
39 Toolbox 3 — DOS Utilities

Collections:
40 C lang. Disks (6 disks).....$18
41 Turbo Pascal (6 disks).....$18
42 Lotus 1-2-3 worksheets & macros (6 disks).....$18
43 350 page paperback directory.....$8.95

PRINTERS
STAR LV-1210 IBM COMPATIBLE: 120 CPS hi-res. graphic PTG. Fr/tractor feed, NLQ.....$229.00
STAR MX-10 IBM COMPATABLE: 120 CPS-Draft/30 CPS, NLQ, FR/tractor feed easy auto single paper feed, select print mode, typeface and print pitch all from front controll panel.....$269.00
STAR POWERTYPE DAISY WHEEL PRINTER IBM COMPATIBLE: Letter quality-18CPS, 32 easy access format switches, standard printer mode and word processing mode.....$369.00
SEIKOSHA-SP1000 (Japan) IBM/EPSON COMPATIBLE: 100 CPS. Draft/20CPS.....$249.00
COPAL-SC1200L (Japan) IBM COMPATIBLE 120 CPS Draft/24CPS NLQ, FR/tractor feed front panel switch selectable, multi-function control.....$275.00

EPROMS
2716.....$3.75 2764.....$4.95
2532.....$4.75 27128.....$6.50
2732.....$4.25

RAM CHIPS
V-20(5mHz).....$14.75
V-20(8mHz).....$19.75
64K Set of 9.....$12.75
256K Set of 9.....$35.75
128K Set of 18 for AT.....$79.75
8087-3 5mHz.....$119.75
8087-2 8mHz.....$169.75

NETWORKING BIOS ROM
New ROM lets you run the Novell Network as well as others. Will work in turbo boards but will not support the turbo mode.....24.95

BULK DISKETTES DSDD
$49.75 Per 100

NEW IBM COMPATIBLE TEXAS ROM BIOS
A new 2 chip bios set that replaces the existing ROM bios on your compatible XT or Turbo-XT motherboard. These eliminate many timing, parity, & system errors. Also eliminates the occasional "hang up" problems in the Turbo XT boards. Runs all software for IBM computers.

$24.95

New Speed-Up BIOS for Clone Non-Turbo Boards
If your system takes forever to format a diskette—this is the answer!.....$19.95

TEXAS-4 EPROMS
59.75/per set

SUPER EPROM PROGRAMMER
EPROM Sizes: 2716-27512
Programs "A" Type Chips
Can Prog. 4 EPROMS at a time. High Speed Algorithms
Can Program From Disk
Can Edit Disk
Software Included
Can Save Program to Disk

$179

SWEET "P" PLOTTER AND ACCESSORIES
1 Pen Color Plotter, pens incl.....$139.95
Set 4 pens.....$6.25
Manual.....$7.75
Cable.....$12.75
Sweet "P" Plotter Diskette.....$3.75
BPS-IBM Bus. Graph. Prgm.....$24.75
w/charts & software in 2 volumes

Commodor Color Printer Plotter
Fits all Commodor Computers.....$59.95

EXTERNAL 5¼" DRIVE HOUSING
Paradyne Computer Housing can be used as an external case to house hard or floppy disk drives. Contains 150W power supply. IBM colors.
$69.75

Popular DB Series
COMPUTER CONNECTORS
9 Male solder pot.....$1
9 Female solder pot.....$1
9 hoods.....$.65
25 male solder pot.....$1.25
25 Female solder pot.....$1.25
25 hoods.....$.75

3 Volt Lithium Battery
Used as battery back-up on most multifunction cards. Mallory
$1.00 each—10/$5.00 Holders—10/$5.00

DATA BOX
This A-B switch lets you share your computer with any two peripherals (serial or parallel). All 25 lines are connected. Has one DB25 female input & two DB25 female outputs.
2 way....$39.95 4 way....$59.95

USA ☆ ELECTRONICS
DISCOUNT WAREHOUSE
2847 ANODE LANE • DALLAS, TX 75220 • 214/350-0212

TERMS: Check or M.O. COD's add $1.90. / Shipping add $3.50. for small packages
Texas residents add6 1/8% sales tax / MasterCard, VISA, American Express, Diners Club Accepted
Availablity and price subject to change without notice.
Returns require authorization and may be subject to 15% restocking charge.
All products carry manufacturers warranty / Exchanges only - NO CASH REFUND.

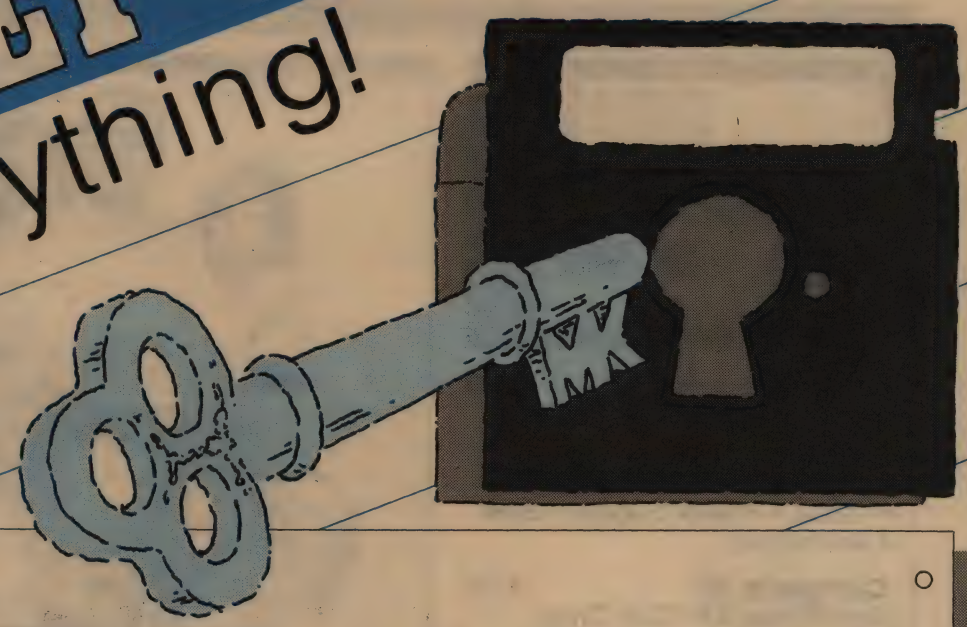
VISA MasterCard

COMPUTER PAPER AND MAILING LABELS
STAR LASER CUT

9½x11
2500 sheets bx—20 lbs white.....$28.95
1000 sheets—20 lbs white.....$14.95

Labels
1 ACROSS—5000 Labels.....$18.95
1 ACROSS— 500 Labels.....$4.95
2 ACROSS—2000 Labels.....$14.95
3 ACROSS—3000 Lables.....$17.75

MASTER*KEY
Unlocks Everything!



```
A>DEBUG
-N PROGRAM.COM
-L
-D 100 129
33CB:0100  EB 0B 40 05 56 65 72 73-20 31 2E 38 31 50 B4 30   k.@.Vers 1.81P40
33CB:0110  CD 21 86 E0 3D 36 01 72-05 3D 0A 02 76 09 BA CB   M!.`=6.r.=..v.:K
33CB:0120  03 B4 09 CD 21 CD 20 58-EB 2F                     .4.M!M Xk/
```

Without MASTER*KEY, how long do you think it would take to find out this program wasn't running because you had the wrong version of DOS?

turn this: into this

instantly and automatically with a turn of **MASTER*KEY**!

```
OFST  ASCII  OBJCODE      SRCECODE
                          ;Program:  PROGRAM.COM
0100         EB0B         H0100:  JMP    H010D
                          ;-----------------------------------------------
0102         40                   INC    AX                ;NON-BRANCHED CODE
0103   Ve    055665               ADD    AX,6556h
0106   rs    7273                 JB     H017B  ;. . . . . . . . . . . . . .
0108   1     2031                 AND    [BX+DI],DH
010A   .     2E                   DB     2Eh
010B   81    3831                 CMP    [BX+DI],DH
                          ;-----------------------------------------------
010D   P     50           H010D:  PUSH   AX
010E   0     B430                 MOV    AH,30h
0110   !     CD21                 INT    21h               ;get DOS Version#
0112         86E0                 XCHG   AL,AH
0114   =6    3D3601               CMP    AX,0136h
0117   r     7205                 JB     H011E  ;. . . . . . . . . . . . . .
0119   =     3D0A02               CMP    AX,020Ah
011C   v     7609                 JBE    H0127  ;. . . . . . . . . . . . . .
011E         BACB03       H011E:  MOV    DX,03CBh
0121         B409                 MOV    AH,09h
0123   !     CD21                 INT    21h               ;display string, DX
0125         CD20                 INT    20h               ;terminate normally
                          ;-----------------------------------------------
0127   X     58           H0127:  POP    AX
0128   /     EB2F                 JMP    H0159
                          ;-----------------------------------------------
```

Unlock the secrets of your favorite programs:
Decode them and find out how they work.
Incorporate subroutines from existing programs into others:
- For other assembly language programs.
- To call from high-level language programs.

Learn Assembly Language:
Discover how other people program.
See how your source code is REALLY assembled.

Customize and streamline existing machine language programs:
Remove unnecessary or unwanted code.
Alter code to fit your needs.

Ensure hardware-software compatibility:
Examine and alter interrupts if necessary.
Upgrade to newer versions of DOS.
Ensure a questionable program won't harm your system BEFORE you run it.
Make software more compatible with your clone computer.
Translate software from other operating systems.
See how software from another operating system will work with your present one.

MASTER*KEY is an intelligent MS-DOS Disassembler. It produces easily readable self-documented assembly language segmented source files that can be edited with any ASCII file text editor or Word Processor then re-assembled using MS-DOS Debug, Assembler, or Macro Assembler and linked with other object modules if desired. It handles object code from the 8088, 8086, 8087, 80186, 80286, and 80287 processors. It decodes into MS-DOS 2.0, 2.1, 3.0, and 3.1 from **BOTH** COM and EXE files.

MASTER*KEY includes a Source Code Formatter and Cross-Reference Generator. The Formatter produces a documented source listing identifying all ROM BIOS and DOS Functions and Interrupts. It serves as an object code optimizer by helping to identify stack areas, temporary storage, ASCII strings, and unnecessary code. The Cross-Reference identifies the number and location of all labels, symbols, functions, and interrupts.

Minimum System Requirements:
256K 8088/8086/80186/80286 PC
MS-DOS 2.0, 2.1, 3.0, or 3.1
One 360K DSDD Floppy Drive (IBM PC Format)

Not copy protected

$49.95

Phone Orders Accepted on MC or VISA. **714-596-0070**
C.O.D. orders (cashier's check or M.O. only) add $3.50 shipping.
California residents add 6.5% sales tax.

Mail to: Sharpe Systems Corporation
2320 E St., La Verne, CA 91750

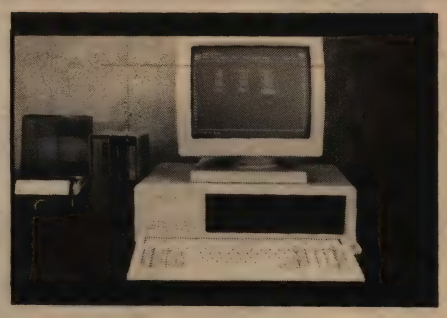
YES! I want to unlock my programs. Send **MASTER*KEY**

☐ I have enclosed a check for $52.45 ($49.95 plus $2.50 shipping).
☐ Please send my order C.O.D. (Cashier's check or M.O. only) add $3.50 shipping.
California residents add 6.5% sales tax.

Name _____
Company Name _____
Address _____
City _____ State _____ Zip _____

Sharpe Systems Corporation
2320 E. STREET, LA VERNE, CA 91750

Dealer/Distributor Inquiries Welcome



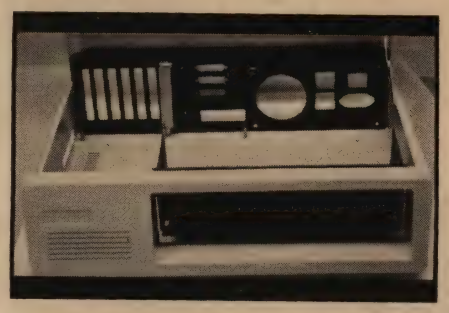
DTC MEGA-KIT™ $500

Bare Bones Kit
Includes: Motherboard 256K • Case • Power Supply, 130W • Keyboard

Complete Kit $750
BareBones Kit + Disk Drive Controller Card and 2 Floppy Drives

Fully Assembled Units Available

SEAGATE 20 MEG. Hard Drive W/Controller $460.00



Mega-Case™ $69.95 *

LEGAL DTC MEGA-BOARD—XT™ * $59.95 EVALUATION BOARD

(Blank Board Ready For Assembly)
All parts for assembly in stock

While Supplies Last:

$10.00 Minimum Order	
62 pin connector	$1.50
14 pin dip socket	.10
16 pin dip socket	.12
20 pin dip socket	.18
28 pin dip socket	.25
40 pin dip socket	.30
10 UF Tantalum capacitor	.38
.1 UF 25U Mono ceramic capacitor	.09
47 PF NPO Mono ceramic capacitor	.18
64K Bit DRAM 200 NS	.98
Bus Controller	9.00
Octal T.S. Buffer	2.65
Shunts	.14

**FCC Class A Approval.*

ONE SATISFIED CUSTOMER

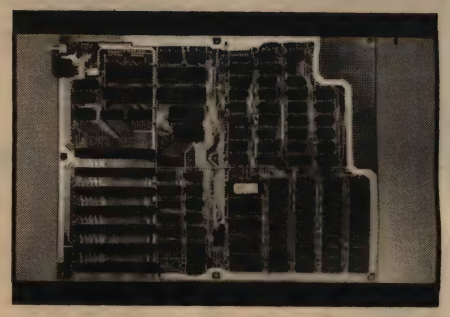
Andy Valentine, Stock Broker

Kathy–Inventory Control

MFG INC

212 Fourth Ave. N. • Nashville, TN 37219
(615) 244-3844

Prices subject to change without notice.



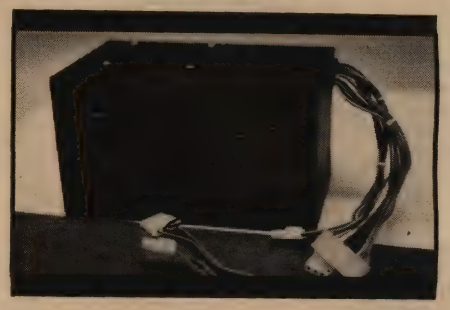
LEGAL DTC MEGA-BOARD—XT™ * $299.95

256K RAM • Fully assembled & TRIPLE TESTED (with all IC's & DTC-2-BIOS) • Made in U.S.A.

MULTIPLE INPUT/DUAL OUTPUT SWITCHING BUFFER $366

4 Computers In—2 Printers Out • Automatically routes Computer to Printer • Internal Buffering 64K or 256K

DTC-2-BIOS $19.95 *



Power Supply (135W) $78.00

Diskette Holder with Lock $14.00

Holds 70 Discs

Monochrome Card (no printer port)	$64.95
Color Card (no printer port)	$69.95
Parallel Port	$29.95
Serial Port	$44.95
Floppy Disk Controller Card	$48.00
AT Case	$99.00
AT Keyboard	$99.50
AT Power Supply	$135.95
Cable 6'	14.95
Cable 10'	16.95

Terms:
1. TN Residents add 7.75% sales tax
2. Visa or Mastercard welcome
3. COD adds $3.00
4. Handling and shipping charges added
5. Personal checks allow 2 weeks to clear.

TANDY COMPUTERS

Tandy Corporation Introduces New Color Computer 3

Tandy Corporation has announced the introduction of the Color Computer 3, an affordable high-performance personal computer with twice the memory, twice the speed and better graphics than the popular 64K Color Computer 2.

The Color Computer 3, available at more than 7,000 Radio Shack® Stores, Computer Centers® and participating dealers nationwide is Tandy's latest addition to an already successful line (more than one million installed) of Color Computers.

The 128K Extended BASIC Color Computer 3 uses a 6809E 8/16-bit microprocessor with a clock speed of .87 MHz or optional 1.7 MHz.

The Color Computer 3 comes with 128 RAM, internally expandable to 512K. A proprietary chip incorporating a memory management function gives the Color Computer 3 the ability to run the powerful OS-9 Level 2.0 operating system.

Twenty-one new commands have been added in Extended BASIC. Four new keys, Control, Alternate, F1 and F2, have been added to the computer's typewriter-style keyboard and all four arrow keys have been relocated on the right side.

Not only does the Color Computer 3 have twice the memory and more power but it also has better graphics than any other Color Computer. In the higher graphics mode, users can select 160 x 192 or 320 x 192-resolution with 16 colors (out of a pallette of 64) or 640 x 192-resolution with 4 colors.

Tandy's new CM-8 Color Monitor (Cat. No. 26-3215), designed especially for the Color Computer 3, provides crisp graphics and easy-to-read text displays, up to 24 lines of 80 characters (upper and lower case). Retailed at $299.95, this high-resolution RGB color monitor has a 13" diagonal screen and excellent audio/video capabilities.

All Tandy software and hardware accessories for the Color Computer 2 are compatible with the Color Computer 3. Users can determine the overall system cost by choosing the peripherals and software which meet their specific needs.

"Since its initial introduction in 1980, unit sales of the Color Computer have continued to increase. The Color Computer is unique in that it is the only home computer which, because of its architecture and operating system, has the ability to run business applications and even perform multitasking functions," explains John V. Roach, chairman and chief executive officer of Tandy Corporation.

"We are confident the new Color Computer 3 will continue the tradition of excellence. It's incredible price performance, additional memory and versatility will no doubt make it the choice computer of many professionals, educators and families."

Suggested retail price of the Color Computer 3 (Cat. No. 26-3334) is $219.95.

Color Computer Specifications

Hardware

The Color Computer 3 features:

a 6809E 8/16-bit microprocessor;

clock speed of .87 MHz or 1.7 MHz;

32K ROM, 238K RAM, internally expandable to 512K;

a 57-key typewriter-style keyboard including control, Alternate, F1 and F2;

text display capabilities of 32 x 16, 40 x 24 or 80 x 24;

color graphics capabilities ranging from 64 x 32 (8 colors) to 640 x 192 (4 colors) with six intermediate display formats. High-resolution graphics available through machine language, Extended BASIC or Program Paks;

21 commands in enhanced Extended BASIC.

Includes the following input/output ports:

1500-baud cassette (recorder optional);

two 2-dimensional joysticks (optional);

RS-232C serial port (4-pin only);

standard TV connection (300 ohms);

composite video;

RGB Analog;

Audio.

Accessories

All Tandy hardware and software accessories for the 64K Color Computer 2 are compatible with the new Color Computer 3.

New CM-8 High-Resolution Color Monitor (Cat. No. 26-3215) $299.95

designed specifically for the Color Computer 3;

displays up to 80 x 24 text and 640 x 192 graphics;

13" diagonal screen.

Availability/Price

The Color Computer 3 is available at more than 7,000 Radio Shack Stores, Computer Centers and participating dealers nationwide.

For more information contact Tandy Corporation/Radio Shack, 1800 One Tandy Center, Fort Worth, Texas 76102. ●

New Tandy Color Computer 3

Something New For The Classroom From Ft. Worth

by Lon Andrews

"Is This Really Tandy?" I knew that I was in a Tandy Computer Center sitting in front of a Model 1000 but what I was seeing and hearing was a far cry from the Tandy Radio Shack that I have defended so many times in the past. They were actually demonstrating a software package from a third party! That in itself isn't any big deal since Tandy started their new third party software program, but this package is so good that it will blow some apples right off the desk. We are going to have to change some old sayings to something like "A Tandy for the teacher" and "A Tandy a day keeps the doctor away."

Tandy has linked hands with Education Systems Technology Corporation (ESTC) in San Diego to present the first workable solution to using the micro effectively in a learning lab situation that I have seen. Tandy provides the MS-DOS based hardware and the stability of a large computer corporation that has been around awhile and will be around for some time to come. (To see why read the rest of this issue.) With established computer centers with technical support and a nationwide professional educational staff already active, there is no question about support after the sale. ESTC provides what Tandy has been missing, top notch educational expertise. (The educational staff in math and reading reads like a Who's Who in education. These are names that you read in the textbooks.) ESTC is also joining in the after-sale support. When one of the representatives was asked about the TANDY—ESTC relationship he quipped "I guess that you could say that we are living together, but we aren't married." I didn't hear a "yet" tacked on the end or even hinted at in the conversation, but it is obvious that both parties are working hard at this relationship.

Students Absorbed in Tandy/ESTC Program

Just what is this package that deserves all this hoo-ra? It is the first computerized educational lab for a school that is really worth its sale. Based on a network of modified Model 1000's the lab is hosted by a Model 3000 with a 292 Mbyte hard drive. Each student station is equipped with 640K RAM plus headphones, microphone, mouse and a color monitor. Speech is used in both directions from the computer to the student and vice versa, as needed. The hardware while top notch is no great surprise. What resides on the hard-drive is a surprise!

There are over 1500, 10-to-15 minute lessons in reading and math skills for grades one thru six. Kindergarten is being added shortly. These lessons are based on the necessary skills that have to be mastered in elementary school for successful completion of the basic curriculum.

continued on page 104

TRS-80 Video Tape Tracker— A Review

by Fred Blechman

The Video Tape Tracker is a library manager for your video tapes. It is menu-driven, fast and very easy to use.

Two versions are available—IBM PC and TRS-80. This review describes the TRS-80 version, but they are almost identical in operation.

Data Base

Actually, Video Tape Tracker is simply a dedicated data base, already designed for the specific purpose of keeping track of video taped material.

All you have to do is type in whatever information you want to carry for each title on your tapes. This can include things like the name you assign to the title, a tape identification code, VCR counter reading for the start of the title, the cast, and notes.

Once you've entered the information into a formatted screen, Tracker can print summary or detail lists for you in tape or title sequence. You can also print numbered labels listing the contents of each tape on regular self-stick mailing labels. You can search by tape, title or performer right on the screen, and you can update old entries, add more titles, or delete old ones. In other words, the program has just about all the features you would want in a video library manager, without your having to do all the work.

Disk Formats

The TRS-80 diskette is a single-density 35-track format. Any Model I operating system can read it as-is. To use it on a Model III, LNW or MAX-80 (or Model 4/4P/4D in Model III mode), you will have to use the conversion utility supplied with your DOS. This will require two disk drives. Also, 48K memory is required.

The IBM PC version is supplied on a single-sided diskette usable on any IBM PC compatible, including the single-drive Sanyo MBC 550 (which has about the lowest PC compatibility among the many MS-DOS micros).

Two Trackers

Actually, two Video Tape Tracker programs are included on the disk supplied by ProSoft. TRACKER handles up to 170 titles per file. Note these are "titles," not separate tapes, since some tapes may include several titles. This is enough for most collectors, since separate files can be used for different tape categories (movies, family, musical, educational, etc). However, if you have a larger file and want to keep all titles in a single file, then TRACKER2 handles 1300 titles, but is not quite as fast in operation as TRACKER.

With TRACKER, you can have 26 characters per record. TRACKER2 allows 119 characters per record. Each field within a record has a predefined maximum length. For example, the tape identification code can be up to four characters, while the title itself can be up to fifty characters. The limitation for each field is clearly shown on the display during data entry, and all fields together cannot exceed the record length.

An EXAMPLE file is included to let you see how TRACKER displays information. This also lets you learn how to use the program before going through the effort of entering your own information.

```
<*> <*>  T A P E   T R A C K E R      (C) 1983, PROSOFT  <*> <*>
.............................................................
VIDTAPE/LST      0 ENTRIES       0 CHANGES NOT YET SAVED

WHAT DO YOU WANT TO DO:

*1. ADD NEW TITLES                 8. SEARCH BY TAPE I.D.
 2. DISPLAY/MODIFY DETAIL LIST     9. SEARCH BY TITLE
 3. PRINT DETAIL LIST             10. SEARCH BY PERFORMER
 4. DISPLAY SUMMARY LIST          11. PRINT LABELS
 5. PRINT SUMMARY LIST            12. CHANGE PRINTER/FILE SETUP
 6. SEQUENCE BY TAPE I.D.         13. SAVE UPDATED LIST TO DISK
 7. SEQUENCE BY TITLE             14. END PROGRAM AND EXIT
.............................................................
SELECT BY NUMBER (*1-14): ? .
```

Figure 1 Video Tape Tracker Menu

Using TRACKER

After loading TRACKER and the name of the list you want to use, the Main Menu shown in Figure 1 appears on the screen. It shows your file name (in this case, VIDTAPE/LST), the number of entries (0 if a new file), the number of changes not yet written to disk, and a 14-choice menu. The default menu choice is preceded by an asterisk.

When first using a file, naturally you'll add new titles, so you would choose 1, or just press ENTER since this is the default. Now Figure 2 appears on the screen. Notice that solid blocks appear on each line to indicate maximum record length. If you try to type past that position on the line, the cursor will move to the next line.

Data Entry

All of the fields but TAPE ID and TITLE are optional, and may be bypassed. Cursor movement is quickly and easily controlled by the arrow keys. The cursor is non-destructive and wraps around both vertically and horizontally.

TAPE ID should be one letter followed by numbers, with the letter indicating the category, such as "M" for Music, "F" for Family, "E" for Education, "G" for General, and so on. The TITLE should be as descriptive as possible, with up to fifty characters allowed for this field.

If you have more than one selection on a tape, the "ITEM #" field can be filled in with a single character, such as 1-9 or A-Z. The "COUNTER" field allows you to specify the VCR setting (up to four digits) for the beginning of that title.

```
ENTRY# 1   ....:....1....:....2....:....3....:....4....:....5
TAPE ID ..:F01
ITEM # ...:1
TITLE ....:KIDS AT BEACH - SUMMER, 1982
COUNTER ..:000
TIME .....:0:15
SPEED ....:4
CAST .....:LEE, BILL, MOM, DAD
CAST .....:FIRST (AND LAST) ATTEMPT AT WATER VOLLEYBALL
NOTES ....:
           ....:....1....:....2....:....3....:....4....:....5
 ACCEPT ..: .
RESTART ..: .
   QUIT ..: .
```

Figure 2 Input Screen

The "TIME" field also allows four digits, usually expressed as H:MM (hours and minutes). The "SPEED" field allows one digit, intended to indicate whether the recording was made at standard play (2 hours), long play (4 hours), or extra-long play (6 hours) speed. No field is provided to indicate the tape length. Since both tape length and recording speed determine the total time available on a tape, there should be some provision in the program for indicating this maximum tape time. If you make all your recordings at the same speed, you can use the SPEED field to indicate maximum tape time, such as 2, 4, or 6 hours. Then, by looking at the total time of all the titles already on that tape, you can tell how much time is left for another title.

Two "CAST" lines and one "NOTES" line are available. If your total record length exceeds that allowable (226 characters for TRACKER and 119 for TRACKER2), the excess will be dropped working backwards through NOTES and then CAST.

Figure 3 shows a typical completed screen.

Control Area

The three extra lines at the bottom of the screen are accessed by pressing the CLEAR key. The cursor can then be moved among the three prompts using the up and down arrow keys. Or, you can press CLEAR again to move the cursor back to the data area.

"ACCEPT" records the screen information in memory, for later saving to disk. "RESTART" clears your input from the data area, and allows you to start that record again. "QUIT" sends you back to the menu.

Press CLEAR and you're back in the data area for another entry. You can enter as many titles as necessary this way, up to the 170-title capacity of TRACKER, or the 1300-title capacity of TRACKER2. From time to time you exit the data entry mode, return to the menu, and save your latest records to disk with menu selection 13.

Reports

As you can see from the menu (Figure 1), there are many options for displaying or printing the information you have typed in. Each of the options offer various choices, such as the beginning record and number of records in the report, and paper is paged as desired.

You can display, modify or print each record; display or print summaries of the records; sort by tape identification or title; search by performer; print labels; and change printer report formatting (left margin, lines per page, continuous or page-stop) and default filename.

The labels (one across) show the tape identification in the upper right corner, and up to four lines of titles. If there are more than four titles on one tape, only the first four are shown.

TRACKER2

If you find yourself getting close to the 170-title limit of TRACKER, the disk contains a program called "TRACKCVT," which converts TRACKER files to the different format required by TRACKER2. This is a one-time operation.

TRACKER2 can handle up to 1300 titles per file, but it is slower in use since it saves each new record or change to disk immediately, instead of storing them in memory for occasional saving. Also, once you start using TRACKER2, its files cannot be converted back to TRACKER format.

Summary

I found this program to operate quickly and effortlessly, with very little learning time. The program flows so smoothly the documentation is almost unnecessary except to explain some keystrokes for cursor control. Sorting and searching are very fast. The reports and labels displayed and printed as described.

If you collect video tapes (either purchased or made yourself) and want to get them organized Video Tape Tracker will do the job for you. ●

```
ENTRY# 1   ....:....1....:....2....:....3....:....4....:....5
TAPE ID ..:_
ITEM # ...:
TITLE ....:
COUNTER ..:
TIME .....:
SPEED ....:
CAST .....:
CAST .....:
NOTES ....:
           ....:....1....:....2....:....3....:....4....:....5
 ACCEPT ..: .
RESTART ..: .
   QUIT ..: .
```

Figure 3 Sample Completed Screen

IBM-MS DOS

Accounting Partner II

by Brian K. Lewis

If there is any category of software that seems to multiply as fast as a family of rabbits, it's accounting software. While there may be dozens of word processing packages for IBM and MS-DOS computers, there are easily 5 times as many accounting packages. There are packages that range from under $100 to $6000, packages that are overlays for spreadsheet or database software and packages that are supposed to be industry specific. For any small business, identifying the accounting software that will best fit their specific situation can be a herculean task. I would like to share with you some of my opinions about accounting software. These opinions have been formed by working with the software in several different types of businesses. Also, please keep in mind, that any time you use "off the shelf software," you may have to modify your methods of record keeping to fit the requirements of the accounting package. These packages usually can not be tailored to your specific business.

The Accounting Partner II from Star Software Systems is a good example of a medium priced ($995.00), multi-module accounting package. There are five modules provided in this package; general ledger, accounts receivable, accounts payable, inventory and payroll. These modules can be installed and used as a semi-integrated system, operated independently, or in any combination. Unlike some accounting software, the integration of Accounting Partner II occurs only at the end of an accounting period when totals are transferred to the general ledger. There is no automatic updating of any other modules either during the accounting period or at the end of the period. This is a somewhat strange arrangement, given that DAC Easy (at less than $80) is fully integrated. The major problem, of course, with Accounting Partner IIs limited form of integration is that much of the data must be entered more than once to keep your records fully accurate. This is certainly an added cost of operation compared to other accounting programs.

There are other caveats that you should consider when looking at this package. For example, checks for vendors can be printed by the program, but not in the accounts payable module. Vendor check printing can be done only in the disbursement portion of the general ledger module. In addition, purchases for inventory are handled in the inventory module, which has its own vendor records. These are separate from the vendor records in the accounts payable module. The usefulness of the accounts payable module is limited to purchases of non-inventory items. If you are not trying to use the modules on an integrated basis, then you could use the accounts payable module for both types of items. The problem with this approach is that you must also maintain the inventory module or you won't have the history information and the reports you need for good inventory control.

The accounts payable module does support account aging (30, 60 & 90 day), vendor discounts, date of last payment, account terms, and other items. In fact, it very closely resembles the accounts receivable records. Without checking the Star Systems header, it is very easy to forget which module you are using.

The accounts receivable module also uses an item file for producing invoices. The item file contains an item number (stock number), description (up to 120 characters), 5 levels of unit prices and the general ledger debit & credit account numbers. This item file is not integrated with the inventory module. So sales must be manually posted to adjust the inventory balance. The accounts receivable module does permit invoicing of non-stock numbered items. The general ledger debit and credit account numbers can be entered for non-stock items. Stock numbered items will have their descriptions and prices automatically accessed by the program. The ability to enter non-inventory items on the invoices allows for billing for services. However, the preprinted forms recommended for Accounting Partner II use are designed for item sales rather than services. And there is no report function which would allow you to use an alternative form design. Your only alternative is to purchase Star's DB Partner which will allow you to custom design reports based on data transferred from the Accounting Partner II files.

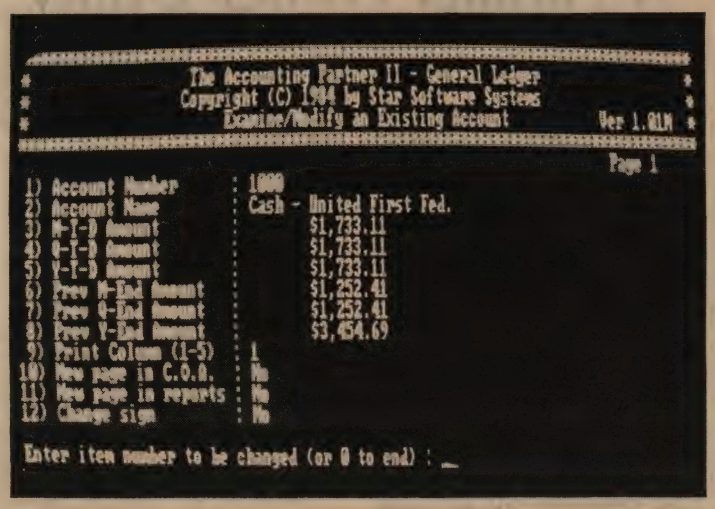


Figure 1 General Ledger Account page. In addition to this page, there is a second page which contains a budget figure for each of 12 months.

All of the Accounting Partner II modules support departmental breakdown of information. general ledger accounts can be set up to support a departmentalized profit and loss statement. Then the standard reports can be run using either the total company or the departmental figures. In setting up the general ledger, you determine what accounts will be subtotaled, what the headings and subheads will be, and in general, design the format of the P&L statement and the balance sheet. The general ledger reports also include daily transaction register, journal registers and a trial balance report. Figure 1 also shows the historical information kept by the program.

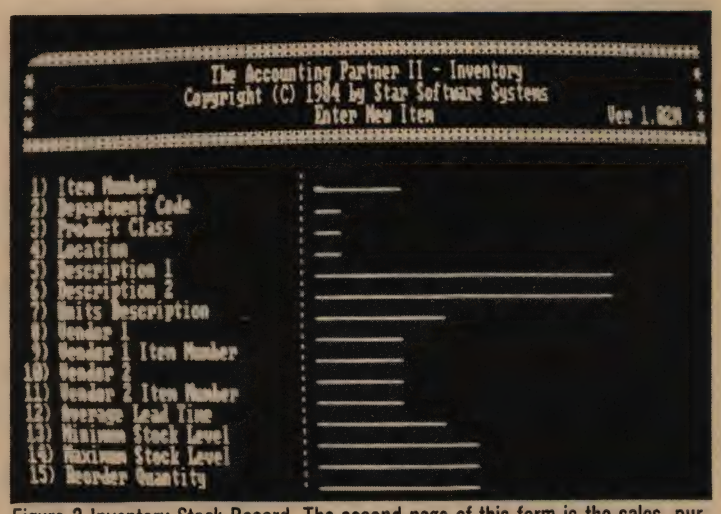


Figure 2 Inventory Stock Record. The second page of this form is the sales, purchase and price history of the item. Only the first page should be completed by the operator. This history data is automatically recorded by the program.

The inventory control module is one of the strong modules in this package, despite the lack of integration. The records for each item include the vendor, average lead times, min/max stock levels, reorder levels and a very good stock history. The inventory reports provide more than adequate information to help a small business keep control of its inventory. Something which can be a real problem in a manual system. However, don't forget, sales, receipts and customer returns must be posted to this system as a separate step from posting to any other module. In addition, the vendor portion of this module does not give you any information on who you owe, or how much you owe. For that kind of information you would have to re-enter data from inventory purchase orders into the accounts payable module. Another unnecessary duplication of effort.

The payroll module also has its positive features. It allows for hourly, salary, and contract employees. The hourly structure will also account for time and one-half, double time and triple time. It also allows for tip reporting, commissions and miscellaneous income. There are four different miscellaneous deductions in addition to pensions and insurance. The program automatically handles federal tax, state tax, local tax, FICA (both employer and employee), FUTA, SUTA. All of the tax tables can be readily modified by the operator. Payroll checks can be prepared by the program, or they can be done manually. The program prepares all the necessary tax reports for payroll accounting, including the end of the year W-2 forms. One caution, the program has no ability to handle user assigned password protection. There are two passwords written into the program by Star Software, but these can not be user changed. And, they are given in the payroll manual, so they can not be considered "secure."

Although the Accounting Partner II can be run on a computer with 2 floppy drives, I would strongly recommend that you use it with a hard disk. The complete system comes on nine floppy disks, including a utility disk. Accounts receivable is 3 disks and payroll is two disks. So if you have a 2 drive system, plan on a LOT of disk swapping. The program files take over 2.5 megabytes on my hard disk. The total space required will vary depending on the size of your data files. It is easy to see why you need a hard disk to run the total system.

If you have some experience with accounting, then installation of the Accounting Partner II system is not difficult. If you don't understand debits, credits and ledger account numbers, you had better have your accountant design the general ledger account system for you. The installation manual provided with the Accounting Partner II system is quite complete, but it is written more for those familiar with accounting principles, than for a novice. It is not as clear as the remaining

continued on page 106

Tornado Notes: A Product Which May Knock You Over

by Dr. Michael W. Ecker

If you find yourself fumbling for scraps of paper, organizers, appointment books, cassette recorders, and other forms of note-taking, then there is a new Kid on the block: Tornado Notes from Micro Logic Corp. A RAM-resident utility in the manner of such classics as Borland International's Sidekick, Tornado Notes features a window to a stack of notes you create in free style. In fact, make that multiple windows, with a look and feel reminiscent of the Apple Macintosh interface. In this case, each window represents a note. You control the contents, size and shape of the rectangular window, as well as the order of notes in the pile. Each note is a separate entity which can be modified, manipulated, trashed, or saved as part of a single note file or pile.

Unlike notes associated with specific applications, such as Smart Notes and Turner Hall/Symantec's Note It (meant for such applications as attaching notes to Lotus 1-2-3), TN excels in its free form combined with its easy and impressive retrieval capabilities, all while Tornado Notes remains RAM-resident. Let's see how this works in practice.

For instance, for purposes of this review, I made a backup of the files on the unprotected disk to my system disk using the DOS copy command. I looked through the TN 80-page manual to get a feel for use, and then relied on the on-screen help system mostly thereafter, occasionally returning to the manual. I also created an AUTOEXEC.BAT file to load TN and my word processor (Volkswriter Deluxe, in this case). I recommend including the date and time in that batch file, as TN has date-stamp and time-stamp capabilities which you may want to use not just for disk saves, but also for your notes. Plus, the date and time are maintained at the bottom of the screen when the program is activated, so you would not really want a meaningless date and time.

Now I was ready to start writing. Prior to entering the word processor, I had entered and saved a note—a collection of free-form lines—with the first word "Review" on top for my own benefit. I had done this by activating Tornado Notes (using the "hot key" combo, Alt J, which I'll explain how in a moment) and entering N (for new note). I had the idea that I was going to call up this note to recall the observations I had made while using and testing TN. In other words, not only did I test the program, but I used it to assist me in writing this review.

After loading TN (by typing TN from DOS, with a copy of the program in the logged default drive, or by having the file TN.EXE in a batch file), I now had the program memory resident. With my word processor in the foreground and TN hidden in the background, I then began this review. I began typing until I had forgotten something. What Now?

Simple: Press the activating key combination, Alt J. That is, hold down the Alt key, and, while holding it down, touch the J key. Up pops a screen full of previously prepared pages or windows—or notes and menus. Menus are protected and indicated with solid borders; other notes have single or double-line borders. (Only the current note, the highlighted one, gets the double-line border, and as you leaf through the not pile on screen, this border changes to mirror that change.)

You can invoke a help menu by typing H now, and you can set the help level, too. You can now cycle through these using the arrow keys, accelerating the process using the analogous keys you'd expect for quicker "paging" through a stack, notably Pg Up, Pg Dn, Home, End. The present note—the one of the visible ones on which action will be implemented if you now choose to edit, save, or other feature—should be highlighted. This was the case on my monochrome monitor, but not initially on my color monitor, both of which were connected to my Tandy 1000 used to test Tornado Notes.

Okay, so now I've got this screen full of notes. How do I retrieve that note without having to leaf through the whole pile? Type G for get and a large window will open. Type a few letters of something about the note you seek, and, with no disk accesses, the program will hunt for the word. In practice, after three letters of the search word, Tornado Notes usually popped up the proper window in a fraction of a second. Specifically, I would start typing R E V ...(for review), and before I could finish, up would pop that note almost instantaneously.

As an experiment, what if I type another word (I chose "color")? My review note contained the reminder "Color?" to prompt me to see about setting the color, the highlights, etc. This time two notes popped up: my review note and a technical note about color settings which had been included as part of the sample files on

continued on page 108

SWAP PORTS— A Parallel Printer Utility

by Andrew M. Fried

SWAP is an assembly language program designed to swap ports LPT1: and LPT2: around. If you currently have two parallel printers attached to your system, you will undoubtedly find this utility of great value.

When you run the program, data transmitted into the second port will now go to the first and vice versa. Absolutely no patches or drivers are required to change your application program; SWAP takes care of everything.

Once the parallel ports are swapped, they may be reset either by rebooting the machine or simply by running SWAP again. The major advantage of this program is that application software no longer need be reprogrammed or reinstalled in order to make temporary use of a secondary printer.

How it Works

When first powered up, DOS goes through a diagnostic mode referred to as POST, or Power On Self Test. During this time, many I/O calls are made in order to establish which equipment is actually installed on the system. The results of this scan are placed in several areas in low memory.

In segment 40h of memory, there is an area that contains information concerning the parallel printer ports. SWAP goes to this area and reads on single word at address 0040:0011. Located within this sixteen bit word is a two bit bitfield which contains the total number of parallel ports located on the system.

After performing some bit manipulation, the number of ports is read in and compared to 2. If there are less than two ports, an error message is displayed and the program terminates.

If there are two or more ports, SWAP goes to memory location 0040:0008 and gets the port address of LPT1: then goes into memory at 0040:000A and obtains the port address of LPT2:. SWAP then stores address one in port 2 and address 2 in port 1, effectively swapping the two ports.

SWAP then displays a message indicating the operation was successful and terminates.

If SWAP detects that you have less than two ports, an error message is displayed and the program is terminated.

How to Compile

This program must be compiled into COM file form by using the following sequence

1 - "MASM SWAP"
2 - "LINK SWAP"
3 - "EXE2BIN SWAP SWAP.COM"

Once compiled, you should end up with a 679 byte program. ●

```
swap_ports      segment para public
                assume cs:swap_ports
                org 100h                ; make it a com program

public  codearea, start, copyright, ok_msg, err_msg, num_ports, go
public  print_notice, portcount, do_swap, done, err_exit, exit, print_string
public  get_portcount, xchg_ports

codearea        proc far
start:          jmp go

copyright       db 13,10
                db 'ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ:',13,10
                db ':                                          :',13,10
                db ':                  SWAP PORTS              :',13,10
                db ':    A PARALLEL PRINTER UTILITY PROGRAM    :',13,10
                db ':                Version 1.00              :',13,10
                db ':                                          :',13,10
                db ':  (C) Copyright 1986 by Andrew M. Fried   :',13,10
                db 'ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ(',13,10,10
                db ' From the September 1986 Computer Shopper',13,10,10,'$'
ok_msg          db '))) The LPT1 and LPT2 ports have been successfully '
                db 'swapped.',10,13,'$'
err_msg         db '))) You must have at least two printer ports in order '
                db 'to swap port addresses.',13,10,'))) Program aborted...'
                db 13,10,'$'
num_ports       db (?)


go:             nop                     ; begin by printing copyright notice
print_notice:   lea dx,copyright        ; print copyright notice
                call print_string
portcount:      call get_portcount      ; get number of printer ports installed
                mov al,num_ports        ; get actual port count
                cmp al,2                ; do we have at least two ports???
                jb err_exit             ; nope - can't swap anything around
do_swap:        call xchg_ports         ; perform actual port swap
done:           lea dx,ok_msg           ; print OK message
                call print_string
                mov al,0
                jmp exit                ; terminate program
err_exit:       lea dx,err_msg          ; point to error message
                call print_string       ; print error message
                mov al,31               ; enter General Failure error code
exit:           mov ah,4Ch              ; dos call to terminate and exit
                int 21h                 ; terminate program
                ret
codearea        endp


print_string    proc near
                push ax                 ; save ax and ds registers
                push ds
                mov ax,cs               ; load code segment into ds
                mov ds,ax
                mov ah,9                ; print string function code
                int 21h                 ; dos function call
                pop ds                  ; restore registers
                pop ax
                ret                     ; return to caller
print_string    endp


get_portcount   proc near
                mov ax,40h              ; move data segment into ds
                mov ds,ax
                mov cl,6                ; set counter for shift
                mov bx,11h              ; set offset for number of ports
                mov ax,[bx]             ; get value
                shr ax,cl               ; shift right six times
                and al,3                ; mask of unwanted bits
                mov num_ports,al        ; move count into memory location
                ret
get_portcount   endp


xchg_ports      proc near
                mov bx,8                ;load port1 offset
                mov ax,[bx]             ;load port 1 address into ax
                mov bx,0Ah              ;load port 2 offset
                mov cx,[bx]             ;load port 2 address into cx
                xchg ax,cx              ;swap the words around:
                mov [bx],cx             ;put new port back into port 2
                mov bx,8                ;load the address for port 1 back in
                mov [bx],ax             ;put new port back into port 1
                ret
xchg_ports      endp


swap_ports      ends
                end codearea
```

Powerful MS™-DOS Software.

For the IBM®-PC, XT, AT & others with generic MS-DOS/PC-DOS 2.0 or higher.

Not copy protected!

Only **$39.95** Each!

UTAH COBOL™

Whether student, teacher or professional programmer, this is the one you've heard so much about.

- ☐ It's easy to use. Compiles 5000 statements on a 128K machine.
- ☐ 170 clear error messages, i.e. DATA-NAME IS MISSING OR MISSPELLED.
- ☐ Distribute your object code programs royalty free.
- ☐ Small object code programs conserve disk space.
- ☐ Fast compile times to increase programmer productivity. Over 25 times faster than one compiler costing $995!
- ☐ You get a diskette and 213-page manual with lots of examples and 16 complete COBOL source code programs. **$39.95.**

Also available: COBOL Application Packages, Book 1 **$9.95.**

UTAH PASCAL™

- ☐ 14-digit precision, BCD math, no round-off errors with decimal arithmetic for business and floating point +63 −64 for scientific.
- ☐ A very nice TRACE style debugging.
- ☐ Arrays up to 8 dimensions and 64K strings.
- ☐ External procedures and functions with dynamic auto-loading.
- ☐ One-step compile, no assembly or link required.
- ☐ You get a 132-page manual and diskette. **$39.95**

UTAH PILOT™

- ☐ Perfect for industrial training, office training, drill and testing, virtually all programmed instruction, word puzzle games, and data entry facilitated by prompts.
- ☐ John Starkweather, Ph.D., the inventor of the PILOT language, has added a built-in full-screen text editor, and much more.
- ☐ Meets all PILOT-73 standards for full compatibility with older versions.
- ☐ You get a diskette, 125-page manual and ten useful sample programs. **$39.95.**

Also still available for 8-bit machines with CP/M® is our world famous Nevada Software Series used by 50,000 customers in 40 countries. These include Nevada COBOL, Nevada FORTRAN, Nevada PASCAL, Nevada PILOT, Nevada BASIC and Nevada EDIT. **$39.95** each.

Satisfaction guaranteed. If for any reason you're not completely satisfied, just return the package within 15 days in good condition, and we'll refund your money.

IBM is a registered trademark of International Business Machines Corp. CP/M is a registered trademark of Digital Research. MS is a trademark of Microsoft Corp. © 1985 Ellis Computing, Inc.

UTAH FORTRAN™

- ☐ FORTRAN IV based upon ANSI-66 standards.
- ☐ Very fast compile times and easy to use.
- ☐ IF . . THEN . . ELSE constructs.
- ☐ Chaining with blank and named common.
- ☐ Copy statement.
- ☐ ENCODE and DECODE.
- ☐ Free-format input and output.
- ☐ A very nice TRACE style debugging.
- ☐ 150 English language error messages.
- ☐ You get a diskette, and 223-page manual. **$39.95**

UTAH EDIT™

- ☐ A character-oriented full-screen video display text editor designed specifically to create COBOL, FORTRAN and PASCAL programs.
- ☐ Only requires 15K disk space so it can fit on the same disk as your compilers.
- ☐ Completely customizable tab stops, default file type, keyboard control key layout and CRT by menu selection.
- ☐ Diskette comes with easy to read 58-page manual. **$39.95.**

UTAH BASIC™

- ☐ This interpreter has a built-in full-screen editor.
- ☐ Single- and Multi-line user definable functions.
- ☐ BCD Math- no round-off errors.
- ☐ Full Matrix operations.
- ☐ You get 220-page manual and diskette. **$39.95.**

Handling/Shipping: No shipping charge within US. Overseas add $10 for first package, $5 each additional. Checks must be in US Dollars, drawn on a US bank.

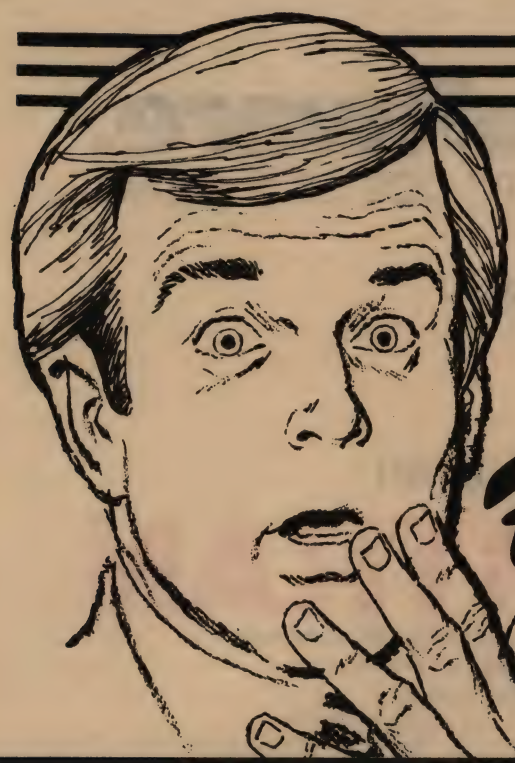
Utah Software requires 128K RAM and PC-DOS or MS-DOS 2.0 or higher.

HOW TO ORDER. Send check or money order to Ellis Computing, Inc. with VISA or MASTERCARD order by phone. Sorry no COD's.

Ellis Computing, Inc.
5655 Riggins Court, Suite 10
Reno, Nevada 89502
Phone (702) 827-3030

SINCE 1977

ELLIS COMPUTING™



DEALERS and DISTRIBUTORS...

You Won't Believe Your Eyes!

Factory Direct —

OUR LIMITED *Special* WHOLESALE PRICE!

MODEL "C" AT COMPATIBLE KITS: $155 WHOLESALE PRICE

INCLUDES: 6/8 MHz Motherboard, Metal Case, 200W Power Supply, Keyboard, Color/Graphics, Floppy Disk Drive Controller Card, Speaker and Manual.

MODEL "C" XT COMPATIBLE KITS: $270 WHOLESALE PRICE

INCLUDES: 640K Motherboard, Metal Case, 150W Power Supply, Keyboard, Color/Graphics, Floppy Disk Drive Controller Card, Speaker and Manual.

NEW ADDITIONS FOR SEPTEMBER—

FCC Approved!

- IC Tester *plus* EPROM Writer Card Compatible to IBM!
- *New* XT Four-Layered Turbo Board!

COMING NEXT MONTH—

- 10/12 MHz AT Motherboard - 4 Megabyte RAM!

Other Models are *also* available, so Dealers and Distributors please call---

Don't miss this Golden Opportunity!

TERMS & CONDITIONS

1. MINIMUM ORDER 10 SYSTEM KITS.
2. ALL SHIPMENTS ***PREPAID*** ONLY.
3. ALL ABOVE MODELS ARE KNOCK-DOWN KITS. DEALER'S ASSEMBLY FEE IS $50.00 PER SYSTEM.
4. ALL PRICES QUOTED ARE F.O.B. YILON WAREHOUSE.
5. PRICES ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.
6. THE FOLLOWING PRODUCTS ARE FCC APPROVED: XT COMPATIBLE SYSTEM, AT COMPATIBLE SYSTEM MONOCHROME/GRAPHICS, COLOR/GRAPHICS, DISK (MULTI) I/0, I/O PLUS II, 384 K MULTI FUNCTION CARD, RS-232 CARD, PRINTER CARD, E.G.A. CARD, DISK CONTROLLER CARD, AND KEYBOARDS (3 MODELS).

YILON

YILON USA, INC.

31352 Via Colinas, Suite 103 • Westlake Village, CA 91362 • TEL: (818) 991-4330 • FAX: (818) 991-4331

IBM, PC/XT, PC/AT are registered trademarks of International Business Machines, Inc.

COMMODORE

C-128 Info for CP/M Enthusiasts

by Cheryl Peterson

Let's start with the wildest rumor I've heard in the last year and work from there. While in Cherp's Library (a room I run on the PlayNET system), someone came in and asked if I had heard the latest Commodore rumor. Not having heard any good ones recently, I said "No, what have you heard?" The response almost knocked me off my chair. "Commodore is planning to discontinue the C-128 in favor of a new model, maybe a C-256 or a C64C + ."

Of course, I can't remember exactly what was said, but that was the gist of it. Since the comment came from someone who is normally pretty good at predicting Commodore activities, I thought I'd check it out.

A call to the Director of Communications got me an answer, "As far as I know, there are no such plans. And I've been to most of the recent planning meetings, so I think I would have heard about it."

Whichever way it turns out, just remember, you read about it here. Just in passing, those involved in the online discussion of whether or not it could be true came to the conclusion that it probably is. In the last two years Commodore executives have managed to shoot the company in both feet and at least one kneecap. Discontinuing the 128 would be tantamount to shooting the company in the head, which many of us think would be just about in keeping with past performance.

In a conversation with John Campbell, head of software support for Commodore, I found little encouragement. He said Commodore has no plans to make the corrected operating system available to those who bought early 128s except by modem, and that it probably wouldn't be available on disk. He also said that they are completely surprised by the interest shown in CP/M and doubted that Commodore would do much to encourage it's use. In fact, he said that he couldn't understand why there was so much interest in it.

When I pointed out the lack of 128 mode software available he laughed and said "You've got to be kidding." Ah well, I guess a couple hundred packages for the 128 easily outshine the thousands of programs available in CP/M or C-64 format.

Kansas—Dust In The Wind, Cardco dies

This one isn't a rumor! Too many folks have confirmed it for me. Cardco (a leading manufacturer of interfaces and software for the Commodore computers) has gone bankrupt. For those of us who use their products and know what a fine company it was, this is truly bad news. At a guess, I would say that their recent financing of research and development for creating Amiga add-ons, coupled with the expenses involved in bringing these products to market, turned out to be a bad investment. Another one bites the dust.

This means that you shouldn't buy Cardco products expecting to get support from Kansas. Either be sure your dealer will back up the warranty or make sure you get a great deal!

For those who may not have heard, Tecmar (once a leading manufacturer of IBM add-ons and another company that invested heavily in developing Amiga add-ons) when faced with possible bankruptcy, sold out to a larger company that specializes in IBM add-ons.

To C-128 owners, who passed up the Amiga in favor of a proven technology, it's reassuring to know that even without Commodore's active encouragement the C-128 is flourishing and third party vendors are making it a useful machine. It's sad to see the beating being taken by companies that chose to support the Amiga, but it is not really unexpected.

An Interesting Development

I just received a copy of Partner 128 from Timeworks. Their latest release, it's a cartridge with desk accessories that can be called up from within most 128 programs (the few of them that there are). While this is a pretty interesting little package, I was so disappointed to find out that it works only in 128 mode. Of course, with the high quality of some of the 128 mode programs, using this cartridge could be a joy.

It contains a calendar, memo pad, calculator, address book/telephone directory that will dial numbers using an auto-dial modem, a label printer that can use the addresses from the phone book, a text-only screen dump, a DOS manager plus a 1541 speed loader that allows a 1541 to work as quickly as a 1571.

While it doesn't do anything for someone using CP/M, it is still an interesting product.

Mailbox

I got a postcard from Hawaii this week. Ralph Lees from Poseidon Electronics has been on vacation, but he should be back in New York hard at work just after Labor Day. That's good news.

I got a letter from Arnie Lee, president of Abacus Software. It seems he took exception to some of my comments about Abacus' books in a earlier column. In the interest of fairness, I want to give him equal time by sharing his letter with you.

continued on page 140

The Amiga Workbench

by Ervin Bobo

Through Ted Drude, our Commodore columnist, we received a letter from Beverly in New York, who simply couldn't find anyone who could tell her how to send ESC codes to her printer from AmigaBasic. It occurs to us that this problem might be sufficiently common to warrant a mention of it here.

Briefly stated, Beverly wanted to be able to write programs which would output to her printer in a variety of type styles and found that the LPRINT statement wasn't getting her ESC codes through to her Epson printer.

Strangely enough, though I have on hand half a dozen books that purport to cover AmigaBasic, none offer any examples of programming featuring output to the printer. So I tossed the problem to my resident guru who also happens to be my brother Ron (and who also contributes to *Computer Shopper*).

The solution was to open the parallel port as a file by using the command:

OPEN "PAR:" FOR OUTPUT AS #1

Subsequent commands will then use PRINT#1 instead of LPRINT:

PRINT#1 CHR$(27) + CHR$(87) + CHR$(1)

PRINT#1 "This is an example of double-width printing"

Let's hope that this is the final answer (any problems, contact Ron) and that it will help others out there.

Now let's get down to work and take a look at some of the software released this month: First, the Amiga as a machine for DEJA VU.

Being one of the four or five people still alive who have no use for Donkey Kong—(and what does the name have to do with the game?)—in any form, I never bothered to look at a program from Other Valley Software called MONKEY BUSINESS, which I had read was a redoing of Donkey Kong.

Well, the folks at Other Valley have redone it again with a game called DELTA PATROL. I admit I was attracted by the game description on the back of the box. After an initial flurry, games for the Amiga seem to have been put on a back burner. And I was impressed by the screen shots on the box, though in retrospect I think I probably didn't look close enough...

As the last survivor of the DELTA PATROL, you must defend the Earth against invading hordes intent upon bombing gas stations and donut stands. To do this, you fly your attack helicopter across the screen in either direction, firing your laser cannon at alien shapes that drift down from above or that seem to hover in midair until you get to them.

Winnie The Pooh & Friends Live on Amiga

Uneven terrain makes it necessary for you to pay attention to your altitude, and collision with any alien is certain death—though you have three lives to squander. To aid you in knowing what lies ahead as the screen scrolls, there is a radar map above you, showing the jagged outline of the terrain as well as the concentrations of the enemy.

While playing the game—which does have very good sound and graphics—I was struck by a feeling of familiarity. Then, of course, it hit me: Defender!

The old standby arcade game, but the spaceship has been changed to a helicopter and the little civilians you had to rescue from the aliens are now gas and donut stands that the aliens keep trying to bomb.

Well, anyway, Defender was a good game and DELTA PATROL isn't bad. Though it can be controlled by keyboard, joystick or mouse, we found

continued on page 141

Deluxe Video For Amiga

by Ervin Bobo

If Deluxe Video and the Amiga computer had existed in 1983, I'd be a wealthy man today...

A few years ago, while working in the field of video, I attached a Commodore VIC-20 to a video recorder to record the output of a program and it worked.

A few weeks later I was asked to tape the birthday party of a boy who would be one year old on the fifth of July. Ideas being what they are, I thought that was close enough to the Fourth of July. So I took the VIC-20 home and using the few things I'd learned and cribbing a few routines from the user's manual, I created an opening sequence in which the words "HAPPY BIRTHDAY, JIMMY" appeared on the screen. (To get letters large enough to be seen, I built them by hand. I didn't know how to program that.) Then they disappeared, to be replaced by a red firecracker and I suggested an explosion by rapidly cycling screen and border through the eight available colors.

Once it was on videotape, I attached the recorder to my stereo and, using the audio dub feature, recorded a rousing martial piece (go figure) for a soundtrack.

It worked. More than that, it impressed the client. I went on with the technique, buying a C64 and Graphics BASIC in order to do even better animation, and I've detailed this experience just to show how primitive computer videos were only a few years ago.

Now everything about the process has changed. Deluxe Video from Electronic Arts can lead us all out of the dark ages of computer videos for with it a person with no programming knowledge can combine pictures, graphics, animation, music and sound effects into videos that are as stunning as those you see on TV. And it can all be done on the Amiga computer.

First, some definitions: "Video" is to television what "radio" is to—well...radio. But when used in the form *a* video, it has come to denote a short sequence created for television, such as the music videos on MTV to use the most popular example. And the opening of *NBC Nightly News* is also a video, as are any number of commercials and animated station breaks.

So now that you know what a video is, what are you going to do with it? The birthday party tape is obvious: I gave you that one. But how about using it for a business presentation, where the bars of your bar chart twist and turn onto the screen, taking up their places before a graph background? Or a pie chart where the pieces appear one at a time, moving across the screen while accompanied by sound effects or music?

Or use them in education, to give a graphic demonstration of the Pythagorean Theory; or in advertising, to show off a product or to demonstrate a service. This isn't just idle speculation: these videos and more appear on one of the three disks that comprise the Deluxe Video set.

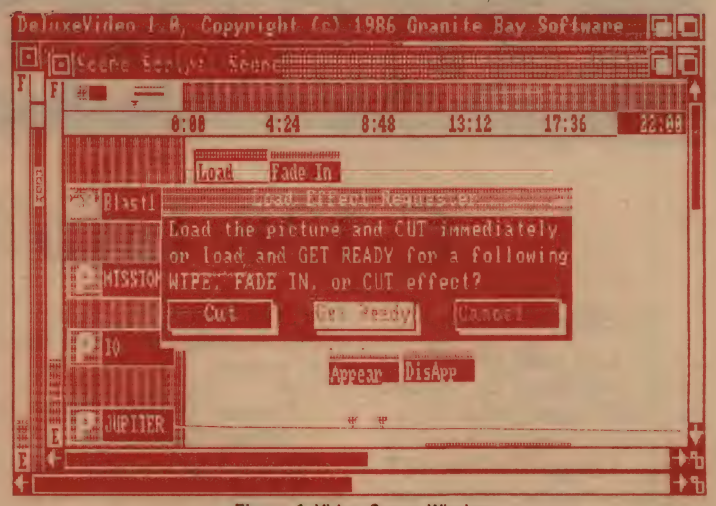


Figure 1 Video Scene Window

(The pie and bar charts mentioned also supply a quick solution to the man in a hurry. Here, all the animation routines have been done for you, so that if you need a chart you simply call up the proper chart requester, fill in labels and percentages and let it play. You are limited to only four points in the bar chart, though you can opt for as many as twenty pieces of pie.)

The first of the three disks that comprise Deluxe Video is the Maker disk and it has been coded under Electronic Arts new copy protection routine: You can copy it (in fact, you are urged to do so) or you can install it on a hard disk. However, when booting up, you'll still need to have the original Maker Disk on hand to provide indentification before the program will run.

The other disks, Parts and Player, are freely copyable and because the Player disk allows you to make "runtime" copies of your videos, you'll probably want to have several of these on hand.

To take them in order, the Maker Disk allows you to make videos and provides you with a few files in order to get you started. You build videos one scene at a time by "writing" a script with pop-up menus that allow you to install "tracks," inaugurate "effects" and load the "parts" that will make up your scene.

Since these operations are done with mouse control, the matter of making videos has now become a "cut-and-paste" routine that allows you to combine elements in much the same way you would do with "Print Shop" or "Deluxe Print."

You first open a Scene window as seen in Figure 1 and pull down a Track icon. Now a requester window will ask what you wish to do with that track. In this case, we've elected to load a Picture (think of it as a background). To the right of this, below the Time Line, we've pulled down an Effect icon and the effect we chose from the menu was Load.

When the video is played back, this will cause the background to be loaded into video memory but not displayed. The display is controlled by the second Effects icon on the same Track, the one labelled Fade In. You'll notice this icon has two arrows: these can be "sized"—pulled apart or compressed—to control the length of time you wish to allow for the Fade In process.

In sizing an effect, or the length of time you wish something to be displayed, refer to the Time Bar at the top of the Scene window. This presents measurements in seconds and "jiffies"—1/60 second—and the use of it is critical, not only to the timing of the events in your video but also to whether you can create a video at all.

As an example, if you place the Load designation for your first image at the fifteen second mark, it will mean that you've thrown away most of your allotted time. Fortunately, for the wisest use of time, events in your script can overlap and can even occur simultaneously.

If all this sounds complicated, it is so only in the telling and a great deal of that lies in the fact that we are using terms and concepts that are foreign to normal computer work. The explanation in the documentation is equally confusing and for the same reasons, but once you follow the step-by-step tutorial it all begins to come clear and soon you'll be adding Tracks and Effects like there's no tomorrow.

There are, in fact, four types of tracks to be used: Picture, which supplies a background; Object which allows you to call

continued on page 145

Cadpak 64 & 128 for Commodore Graphics

by Cheryl Peterson

Cadpak differs from many other drawing and graphics packages designed for the Commodore computers. It is meant to appeal to mechanical artists and those who need precision in their drawings, rather than the graphic artist who strives for "Paintings" with emotional content or surrealistic qualities.

Cadpak is designed to be used with a high-quality light pen or with keyboard input. You must load the version appropriate for your choice of input. Joysticks do not work with it. The 64 version has 320 by 200 pixels screen resolution. The 128 offers 640 by 360. A second disk drive can be used for data storage eliminating some disk swapping.

Before starting to use the program, you must use a program to set the dimensions of your printer. With the scaling features of this program it is possible to draw a one inch line on the screen and have your printer return a one inch line; more exactly than I would have thought possible.

When starting a drawing you must designate whether it will be printed normal or large size. This is because the program does some fancy footwork to make sure that circles printout as circles, not as the ovals they sometimes become when using unscaled drawing programs.

While Cadpak offers many of the same features as other graphics programs, they are presented in a manner more convenient to the mechanical artist. In addition, some less common features, like up and down scaling, are included.

Since I've never really done much mechanical artwork, I "borrowed" a neighbor who is a mechanical artist to check out the program. After a trip through the manual, he said it sounded like it would be ideal for the kind of work that he does. He sat down and made a few primitive sketches and thought the user interface was reasonably easy.

He loaned me a couple of drawings he had made, so that I could get a better understand ing of the requirements of such an illustration. Besides exact scaling, it contained distance and angle measurements expressed in inches, or centimeters and fractions thereof and in degrees. Titles and dimensions were also written in. Cadpak comes with three fonts and four sizes of type for labeling items.

The program uses two screens. The work screen contains the picture you are working on. The second screen is used to hold elements for transfer into your workscreen. You can design 16 by 16 pixel objects and save them for later use using Cadpak's object editor. You can have as many as 104 of these objects accessible at a time. A set of objects with electronic and mathematical symbols is included on the disk.

Objects can be moved into your picture exactly as they are or they can be mirrored or turned in 90 degree increments, vertically, horizontally or both. Objects can also be increased in size on either axis or both.

A patterns editor allows you to design eight by eight pixel patterns. In addition to the seven provided on the disk, these can be used to fill in any solid object.

Also on the disk are pictures that accompany the manuals tutorial, including a map of the United States with the state outlines.

The actual drawing commands are similar to those provided with other graphics programs lines, rays, boxes, circles, ovals and arcs. A "try again" command is included to undo the last function performed. A plain old draw command is included for free-hand work. All of the functions are pretty easy to use, once you master the controls. This may take a bit longer than with some of the simpler drawing programs.

continued on page 147

ATARI ST

Hacking The ST

by Wynn Rostek

One of the most surprising results of writing this column is that I have found out that many (maybe even most) ST owners have never owned a computer before.

I knew that quite a few people who have worked with computers extensively would buy the ST for the 68000 CPU and the half a megabyte of RAM. I also thought that many of the new machines would go to tried and true Atari fans that have waited in line to buy each new machine. While everyone expected the new machine to attract many new people to the computer fold, I think the number of first time owners has surprised quite a number of people.

Because we have so many ST owners that are using a computer for the first time, I'll try to beef up the amount of information that is presented for the beginners. (No need to worry about being a beginner, everyone has to start out as a beginner sometime. I got started with computers in 1973, and they have consumed an increasing share of my income ever since.)

If the ST is your first computer, then I encourage you to buy OSS Personal Pascal and learn to program in Pascal from the start. Pascal was designed specifically to teach good programming to beginners. It is also a very useful language for almost all application programming.

I guess a word or two about the different kinds of programming is in order, because most people seem to think that programming is programming is programming. Application programs are the most common kind of programs you will run into. Application programs do things like balance your check book, chart your biorhythms and help you pick the winning horse in the fifth.

Games are often treated as just another application program, but except for the text adventure kind of game, game programming is a special art. Really top notch graphics games require some very fancy juggling of system resources and some intricate assembly language programming in order to get everything done in time. The writing of these games is often closer to the programming involved in designing flight simulators than balancing your check book.

Another large area of programming that you will often encounter is systems programming. Systems programming covers many sins. Some of the projects that systems programmers may work on include compilers, assemblers, operating systems, linkers and often editors.

Systems programming also covers system utility programs such as print spoolers and filter programs.

More and more today, operating systems use shells that sit between the operating system and the user to provide a friendly environment for the user. Shells are also systems programs. The desktop on the ST is really just a graphics shell that sits between you the user and TOS the ST operating system.

Another large area of programming is database programming. By database programming I don't mean working with dBASE III, but actually writing a program that implements a relational database. A quick look at the number of database programs out for microcomputers should tell you that a lot of people are working on database programs, but the really big database projects are handled by special teams of people that keep the databases used by the big insurance companies and the Army, Navy and the rest of the nation's defenders. The database systems used by the Pentagon are mind-boggling!

There is a large amount of programming that falls under the heading of scientific programming. Scientific programming includes real-time data acquisition, signal processing, number crunching and an increasing amount of graphics output.

Believe it or not, one of the prime drivers of scientific programming is, and has been since the advent of the digital computer, weather prediction. Predicting the weather involves solving large numbers of equations with many unknowns. The many equations taken together form an item known as a linear system.

Solving linear systems can become very time consuming because some of the linear systems are as large as 1000 equations with 1000 unknowns! In addition to the more commonly known direct techniques such as Gaussian Elimination, there are iterative techniques that are often used on large systems.

Because iterative techniques are so powerful, I will have a sample program later that shows an iterative technique in action. (In most iterative techniques, you start off with an initial guess, and a special equation known as a fixed point function. You then generate a series of new guesses by feeding the answer computed by your first guess back into the same fixed point function. Each pass through the fixed point function means that you are that much closer to the correct result.)

Iterative techniques are often used to find the "answer" to equations. This is known as finding the root of an equation. I will show a standard algorithm for finding the root of an equation a little later.

Because so many people have learned some version of BASIC over the years, I will be using more BASIC in this series. (Even though BASIC makes me break out in hives and I'm in danger of losing by B.S.C.S. if the University finds out about it.)

Back to the issue at hand, why bother with another language if Pascal is so good? Pascal is good for writing most applications programs, but it is a poor choice for systems programming.

C and Modula-2 are used for a lot of systems programming.

continued on page 148

Atari And Microsoft to Offer "Microsoft Write" For Atari ST

Atari Corp. announced it has signed an agreement with Microsoft Corporation to offer Microsoft Write for the Atari 520ST and 1040ST computers. Microsoft Write is based on the Macintosh version of the market-leading Microsoft Word word processing program. The agreement gives Atari Corp. the rights to sell, market, and distribute Microsoft Write worldwide.

Atari Corp. is committed to supporting software developers and publishers to produce the finest software available for the 520ST and 1040ST personal computers. "With their pioneering efforts Microsoft has become the recognized leader in word processing software," says Sam Tramiel, president of Atari Corp. "Microsoft Write on the 520ST and 1040ST will establish a new price performance measure for the industry."

Microsoft Write makes full use of the powerful monochrome and color graphic capabilities of the 520ST and 1040ST personal computers. The 520ST and 1040ST from Atari offer both the professionally styled keyboard and the ease of use features of a graphic interface and mouse. This gives the customer the greatest flexibility of use.

Atari Corp. manufactures the 16/32 bit ST series of personal computers, the 8 bit XE line of personal computers, the 2600 and 7800 video game systems, and an extensive line of computer and video game software.

For more information contact Atari Corp. 1196 Borregas Avenue, Sunnyvale, CA 94086; (408) 745-6833. ●

3.5-Inch 20MB SupraDrive for Atari ST Computers

Supra Corporation announces their new, low-profile SupraDrive Hard Disk for Atari ST Computers. Using new 3.5 inch hard disk technology, Supra has designed a 20MB Atari ST hard disk system that is only slightly larger than an external ST floppy drive. The new small size helps save desk space and allows incorporating the hard drive into equipment stands that previously would not hold a full-size hard drive. The 20MB SupraDrive is shipping now and retails for $799.00.

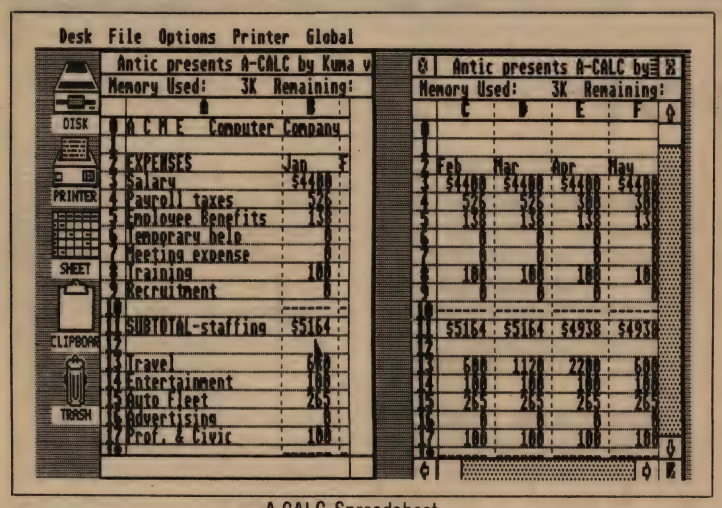
The SupraDrive is a complete system ready to connect to the ST computer. The SupraDrive attaches to the computer's high-speed DMA peripheral port and will improve disk transfer speeds 300% to 1000% over standard floppy-based systems. Disk-intensive applications may show even greater improvements.

The SupraDrive is completely software compatible with the TOS operating system and all applications software. It is also hardware compatible and will work with other standard DMA buss peripherals such as the CD ROM player, coprocessors, and other devices. The ST computer can boot directly from the SupraDrive, eliminating the need for floppy drives except for backups.

The SupraDrive also includes a Utilities diskette that includes format, partition, and backup utilities. Partitioning allows the user to create up to four separate logical drives for file storage. Each partition appears as a icon on the GEM desktop, and is used like a completely separate disk drive. This allows easier retrieval of files and improves directory access times.

For more information, contact Supra Corporation, 1133 Commercial Way, Albany, OR 97321, (503) 967-9075. ●

A-CALC A GEM Based Spreadsheet For The Atari ST



A-CALC Spreadsheet

reviewed by W. Krieger

Spreadsheets are one of the big three applications that along with word processing and data bases dominate the micro computer software market. A-CALC is a GEM based spreadsheet for the Atari ST line of micro computers. It was written in England by Cliff Harker, for a company called Kuma Ltd. and is being distributed in the U.S. by Antic software for $59.95 (524 Second St., San Francisco, CA 94107).

A spreadsheet is one program that is easier to use with a mouse. So it seems strange that it took this long to get a good spreadsheet program using GEM on the ST. And that when one finally does show up it would come out of England of all places. Apparently our friends across the Atlantic are much quicker to accept the ST as a capable business machine than are their American counterparts.

Not that it matters where a program is written, what matters is how well it's written, and whether or not it's copy protected. I have this thing against copy protected programs and I would never recommend a business program that was copy protected. A-CALC is very well written and it's not copy protected.

A-CALC really takes advantage of the features provided by the GEM interface. Drop down menus, multiple windows, and intelligent use of the mouse. This is the easiest to use spreadsheet that I have seen to date. I was able to get it up and going and set up some fairly complicated spreadsheets in less than an hour. Not that A-CALC can do anything any other good spreadsheet program can't do. But it sure is a lot easier to use than any other that I have used.

Providing you have enough memory A-CALC allows for enormous spreadsheets with maximum size of 512 cells high by 256 cells wide. This is a bit of an over kill because each cell takes at least 10 bytes for storage, a maximum sized sheet would require 1280 kilobytes of free memory, after you loaded in the 80k program and any desk accessories. This is of course more memory than even a 1040 ST provides. Not that this is a major drawback, I doubt that there are many people who will come close to running out of memory running A-CALC on a 520 ST let alone a 1040 ST, just to play it safe Mr. Harker has A-CALC constantly display memory used and memory remaining at the top of the spreadsheet window. So if you are doing the books for General Motors A-CALC will let you know if you are getting close to the memory capacity of your system.

When you bring up the program you are presented with a screen showing a window open onto a blank spreadsheet, on the left of the spreadsheet are Icons for disk, Printer, Sheet, Clipboard, and Trash. And at the top of the screen are the drop down Menus for Desk, File, Options, Printer, and Global.

Entering data into the spreadsheet is easy just point to the cell you wish to use with the mouse and double click. This opens an Edit window with the default data type of Value. The data type of the edit window is changed using the TAB key to cycle through the possible choices. The data entered must match the type in the edit window. There are three types of data that can be entered into a cell, Value: ordinary numeric data with a maximum of 4 decimal places, Text: any printable characters and printer control codes, and Formula.

Formula data is of course the mathematical formula needed to calculate the desired cells value using values from other cells. For example if you want cell C5 to be the result of adding cells A5 and B5 then multiplying them by 0.07, in the Edit Window tab until you get the data type Formula then enter (A5 + B=)* 0.07. This would define cell C5 as the result of this calculation. The math functions supported by A-CALC are; Multiply, Divide, Addition, Subtraction, Square root, Absolute, Integer, Sine, Cosine, Tangent, Arcsine, Arccosine, and Arctangent. A-CALC also has functions to give you the Maximum, Minimum, Average, or Sum of a range of cells, either for a cell definition or to be used in a formula to define a cell. All calculations are accurate to 14 decimal places.

Once the data is typed into Edit Window pressing return puts the data into the selected cell, and closes the Window. If however you press a shifted arrow key the data in the Edit Window is entered into the selected cell, and the next cell in the direction arrow key is opened with the edit window ready for input with the same data type as the previous cell. The last way to get data into a cell is to press the Enter on the numeric keypad. This works the same as the shifted arrow key except that it takes the direction of the last "Shift-arrow," used. This works great for entering columns of figures.

If at any time you enter more data than can be displayed in a cell, a right pointing arrow will be displayed at the left of the cell. No data is lost when this happens, and the invisible characters can be displayed by increasing the width of the column. Just position the pointer on the lower right of the column header and drag it to the right. A dialog box will then open asking if you want to change the width of just this column or this column and all columns to the right of the selected column. Once the column width is increased any previously hidden characters will then be displayed.

Another way to get data into a cell is to copy it from another cell you can also copy a row, column or block of cells. For a single cell drag the original cell onto the destination cell. The destination cell will turn black to indicate which cell will be the destination, just release the mouse when you have the data where you want it.

If you need to copy to a cell that isn't displayed on the screen you can drag the cell to the clipboard and save it there until you get to the cell you need. Valid copies are: cell to cell, cell to column, row to row, cell to row, column to column, or block to block. Deleting data is accomplished by dragging the cell, column or block to the trash can Icon.

Movement around the spreadsheet is accomplished by using the standard GEM interface of scroll bars and sliders. During data input the screen will scroll automatically. You can also open multiple windows displaying different sections of the spreadsheet. This for me is a real time saver, under normal circumstances you can't display more than 9 or 10 columns on screen. Most of the spreadsheets I work with are 14 or 15 columns wide with various number of rows. The problem is that when I get far out on a sheet it's hard to remember which row is travel expense and which is food, etc.

With A-CALC I leave a window open onto the first column where I've entered the text explaining the entries for each row. Then open a second window to enter the data allowing me to get as far out on a sheet as I need without losing my place.

A-CALC is just loaded with features that really make this program nice to use. One of the problems with all spreadsheets is that they just don't show enough of the sheet on the screen at any one time. A-CALC tries to help with this problem in two ways, one is the multiple windows I mentioned earlier. You can have up to five windows open at any one time.

The other is with the View option, this increases the number of cells displayed by switching to a half size text. I wouldn't recommend working in this mode for an extended period of time, but it's great for getting a good look at the spreadsheet. With the monochrome monitor you go from displaying 18 lines to displaying 38 lines, the text quality is really quite good, if a little on the small side.

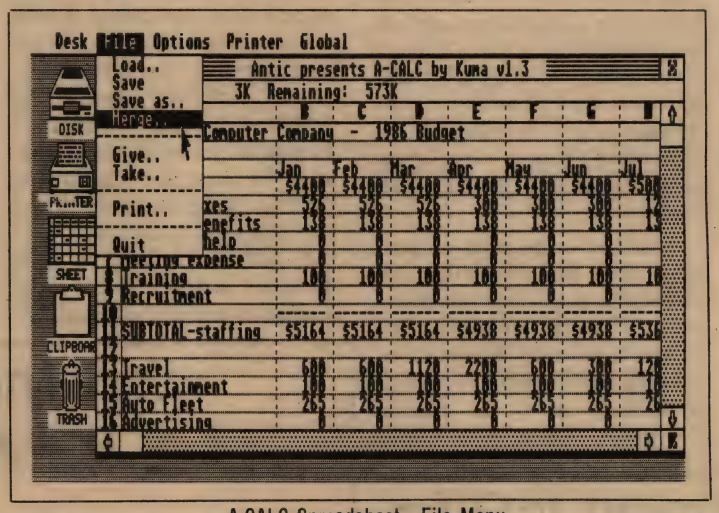
A-CALC is a well thought out package. Among the features I really like are the search and goto options. Search will find a text string within the spreadsheet. Goto relocates the target cell at the top left of the active window.

Another good thing about A-CALC is the different formats that you can save your work in. A-CALC will write three formats and read two. It will save data or read data in both it's own format or in the DIF format which is compatible with other spreadsheets using the DIF format. It will also write the spreadsheet to disk as an ASCII file which can be edited with just about any word processor, perfect for including spreadsheets into reports.

A-CALC comes set up for an Epson 80 column printer and also supplies a driver to use the condensed 132 column mode. If you don't have an Epson compatible printer there is a printer configuration routine to set up a driver for just about any printer. Also on the disk is a nice calculator desk accessory.

I really don't have any major complaints about this program. It would be better if you could work on two spreadsheets at a time. Instead of having to use the merge command to combine them into one spreadsheet. Also it would be nice if A-CALC printed your spreadsheet sideways so you wouldn't have to cut and tape your output to get it into a useable form.

All and all I feel A-CALC is a good package. The documentation is brief at best but is clearly written and well presented. The price of the package is very attractive, and mainly because of the excellent use of the GEM features it's the easiest to use spreadsheet I've ever seen. ●



A-CALC Spreadsheet—File Menu

ATARI

XLENT Software's Typesetter

Reviewed by Jeff Brenner

In the September 1985 issue, when I reviewed XLENT Software's Page Designer, I had many suggestions for improving the program and concluded that while the utility had several attractive features of its own, it was no match for the refined user-friendliness and high quality output of The Print Shop. XLENT's Typesetter can be considered Page Designer's successor. The newer program, written by the same authors, has corrected many of the faults inherent in Page Designer, has added a substantial number of new commands, and has incorporated a scrolling-screen format, as I had suggested in my review of Page Designer. The result is an exceptionally versatile graphics utility that is much more worthy of a comparison with Broderbund's The Print Shop than is Page Designer.

One note before I continue with this review: XLENT Software's Typesetter should not be confused with the printer utility of the same name from DataArts Software. I reviewed DataArts' TypeSetter in the November 1984 issue.

130XE and 48K Versions

Two versions of Typesetter are included on the diskette. Typesetter 130 is on side-one and utilizes the additional memory of the 130XE. The flip side contains a somewhat scaled-down version, Typesetter 65, which runs on 48K Ataris. Having tested both versions, I prefer the 48K side, despite the additional features and capability of the 130XE version. More on that in a minute.

Operation

Typesetter, like many of XLENT's products, actually consists of a number of smaller programs, each of which offers a particular range of functions. The subprograms work together by sharing the same memory areas but are used one at a time. The main section of Typesetter, the Text Editor, is used to place text and graphics characters in various modes, sizes and orientations, anywhere on the scrolling screen display. The other major section, the Sketch Pad, can be used to add graphics to a particular portion of the scrolling screen, to smooth out large coarse characters with smaller pixels, and for other graphically oriented tasks. The Print Options section is used for specifying your printer and for choosing one of three printing modes: vertical full height, vertical half height (vertically condensed to fit on half a page) and horizontal full height (prints to paper sideways).

The end results, when the many additional commands within each subprogram are considered, is a graphics utility that offers an enormous amount of freedom in the creation of a page—a freedom that by comparison is an order of magnitude greater than that offerd by The Print Shop. And, unlike Page Designer, this freedom does not come at the expense of high resolution print graphics.

High Resolution Printer Graphics

Typesetter 65 (the 48K version) offers a maximum page resolution (the number of dots on the final printed page) of 704 pixels horizontally by 624 vertically. Typesetter 130 increases these figures to 768 horizontally by 672 vertically. Both versions make use of the spreadsheet-type scrolling screen which lets the video display serve as a window to view sections of the entire work page. Unfortunately, the 130XE version, in addition to its scrolling-screen, resorts to the dreaded double-screen format we find in Page Designer. This makes it necessary to toggle between the top and bottom halves of the full page to create your work. Loading screens into the area where the two halves of the screen meet, or placing text or drawing graphics in this area can become a terribly complicated ordeal, since the program will only allow you to work with one-half of the page at a time. To make matters worse, the cursor is continuously returned to the upper left-hand corner of the screen whenever you toggle between screens, and character sizes are reset. You had better have a great deal of patience and a mastery of the various screen manipulating commands if you intend to produce a page that appears uniform from top to bottom, instead of a page that appears like two separate ideas stuck together. A little more work on the programmers' part would have allowed them to create a single scrolling screen for the 130XE version. (The authors would only need to devise a means of incorporating the 130XE's extra memory into the scrolling screen. Transferring data from the extra banks to the main memory when needed is one possibility—that's free advice guys!) Instead the authors have taken the easy way out by using the toggle-the-screens scheme to access the 130XE's extra memory (Atari did the same thing when it designed its 130XE version of AtariWriter Plus.) For most of you, the aggravation of switching page-halves, and all of the complications it places on the other commands, will not be worth the small gain in resolution that the 130XE version offers over the 48K one. While some useful Typesetter 130 commands are not present on the 48K version, I still opt for loading the 48K side into my 130XE.

The Commands

Now that some of my complaints have been aired, let's take a look at some of the many fine commands and functions this program offers. The Text Editor allows the use of the standard Atari text and graphics characters, Atari's international font (for XL/XE owners), and a special set of 52 graphics characters. Additionally, other character sets can be loaded in—your own, a public domain character set, or one of the several included on the Typesetter diskette.

Many commands are available to modify the font you are using. For example, characters can be printed in four different widths and four different heights and can be rotated on their side or placed upside down. The 130XE version supports italicizing of text and a special slice mode that produces striped characters.

Other commands operate on the screen itself, such as moving up and down by row or scan lines.

The Sketch Pad mode offers simple drawing options (lines, circles, fills, etc.) and supports a joystick, the Atari Touch Tablet or the Koalapad. The Sketch Pad screen can be copied to a portion of the Main Screen (the scrolling screen) and vice versa. An Overlay command permits the Sketch Pad screen to be merged with the Main Screen, thereby allowing small graphics icons to be stamped where you want them on the page.

Figure 1 XLENT's Typesetter Graphics

Any number of different character sets, sizes, graphics, etc. can be freely mixed anywhere on the page (with the exception of the mid-page area in the aforementioned 130XE problem). This contrasts sharply with the typestyle and positioning limitations of The Print Shop. Still, The Print Shop does offer an advantage, particularly for novices and non-artists, in that its larger characters are already well-defined and make good use of the available printer graphics resolution. The Print Shop's typestyles are therefore much more varied with no effort on the part of the user. Enlarged Typesetter characters have only the 8-bytes of data defining each, and they consequently take on that characteristic block-formed look when enlarged. Also, different typestyles are much less distinguishable from each other because of the little amount of data defining them. Fortunately, the Sketch Pad mode can be used to smooth out and embellish chunky characters and graphics to an extent. This process is extremely time-consuming, but the results for those that persevere can be very attractive. A sample Typesetter printout from XLENT software is shown in Figure 1.

User-Unfriendliness

Quite often, versatility and power in a program come at the expense of user-friendliness. This is often the case with XLENT's products and Typesetter is no exception. The manual states immediately, in fact, the "when ease of use and functionality conflicted, we chose functionality." A lack of error checking, particularly in the 48K version, is one problem; "be very careful about switching disks when using Typesetter 65," the manual warns. Other errors come without warning. Also, on a number of occasions I found myself with a piece of detailed work destroyed by an ill-designed input system which breeds unwanted keystrokes and then takes quick and damaging action. A case in point: After spending more than two hours designing a fancy sample screen to use in this review, an accidental CONTROL-I followed by my intended command of CONTROL-J covered my entire work with hundreds of the triangular control-J keyboard characters. I had accidentally activated the "fill the screen

continued on page 80

Applying The Atari

by Jeff Brenner

All of the intense interest Atari has been generating with the success of the ST computers is now showing itself strongly as the holiday season approaches and new products abound. But the STs aren't the only computers benefiting from all of this attention—the 8-bit Ataris are getting an appreciable share of new titles for themselves. This month we'll take a look at some of these new items, and I'll be writing formal reviews of other products in the months to come. Also in this month's column: reader mail, the inside workings of August's Atari Telephone Master, a printer utility for Okidata 192/193 owners, and a digitized sound demonstration.

New Products

From Electronical Software comes YEMACYB (what?), a printer dump utility written by Michael L. Clayton that allows owners of ordinary black and white dot matrix printers to create quality color printouts from standard high resolution graphics disk files. All that is needed is a 48K 8-bit Atari, a C. Itoh Prowriter, Star Gemini, Epson MX/80 or compatible, and four different printer ribbons: yellow, red (magenta), blue (cyan), and black. Electronical Software says its YEMACYB program: automatically selects and generates all of the 128 available colors from screen data and hardware registers; allows changing of any or all of the graphics colors on every scan line, with a review-graphics-display-before-printing feature; allows up to 128 simultaneous colors on any printout; creates a large printout with the same dimensions as an 11-inch diagonal video display; takes a maximum of 18 minutes for any display (four passes); can convert color graphics to monochrome in a 256 second pass. Several utilities are included on the YEMACYB diskette.

Electronical Software sent me a beautiful four-color printout to demonstrate YEMACYB, and the quality was most impressive (sharper and more solid than a typical Okimate printout). The price is $19.95 and $2.00 shipping. Contact: Electronical Software, P.O. Box 8035, Rochester, MI 48063.

Independent Programmer Marketing has announced several interesting products for the 8-bit Ataris. The Temperature Sensor plugs into the joystick port and includes software which allows calibration of the sensor and chart graphing of temperatures from zero to 130 degrees Fahrenheit. It's $19.95 (and $2.00 shipping per order). The SENTRY II software teams with a light sensor disguised as a small wood figurine stand to watch for any intruder passing before the sensor. BASIC programmers are encouraged to modify the software to allow whatever type of alarm response is desired. The SENTRY II and light sensor are $19.95. The Atari Serial Port Doubler allows you to run two printers and eight disk drives, all selectable under software control. IPM says its great for large BBS's that need more disk storage, or for those that need one printer to print records and another to print checks. The catch is that the software must be altered to toggle bit 4 of the port a control register to select between serial ports, so you will be limited to using software that you can modify (i.e. BASIC programs). The Serial Port Doubler is $26.00. The Real World Control BOX allows computer control of the switching on and off of 120V electricity for applications such as lighting, fans, alarms, door openers, watering systems, etc. The device is a normal metal electrical outlet box containing two 120V outlets and a solid state switching circuit that can be controlled by TTL voltage levels. Each outlet can handle 4 amps (400 watts) of 120V electricity. The RWCB is $24.00, and an Atari buffer cable for the unit is $12.00. The Real World Reader is an interface for reading any device which has an output of one to five volts or four to 20 milliamps. IPM says that most electronic transducing devices (such as pH meters, gas chromatographs, spectrophotometers, humidistats, etc.) have options for such outputs. Software is provided to zero, span, and calibrate the input. Users can add their own recording-analyzing routines in BASIC. The Real World Reader is $49.00. Contact: Independent Programer Marketing, P.O. Box 23123, Richfield, MN 55423.

Games Computers Play, Inc. (GCP), has released a new strategy game on its online service called Lords of Space, which it describes as a graphics-oriented game in which "hundreds of players can explore and trade throughout an unlimited galaxy, in starships of their own creation. There they must explore, trade, battle and ally with other players to survive. Only the most cunning prosper." For those unfamiliar with GCP, the online service is designed around joystick control and full screen graphics. The system is set up like a city in which you "walk around" to various features with the joystick. GCP says it offers over two megabytes of Atari public domain downloads, on-line conferencing, and SysOps to answer your questions. The service supports the Atari 800, 800XL and 130XE computers. Support for the Atari ST will be available this fall. For more information contact: Games Computers Play, Inc., 112 East Market Street, York, PA 17401.

Reader Mail

Dear Jeff:

In discussions with fellow Atarians, I have found no one has any real use for the Atari Diagnostic ROM (except perhaps for testing memory after some hardware hacking). I was wondering at what point in memory the diagnostic ROM is mapped into when switched in, and how much memory it then occupies. Also, is it on a separate ROM chip, or are some OS routines on the same chip? If it affects anything, the computer I have is a 1200XL...but I am certain there are others who would want the same answer for their newer XL/XE machines.

What I am hoping for is that it (the diagnostic program) is at least 8K long and mapped into the cartridge space. That could open up all sorts of possibilities.

On another note, have you heard of anyone attempting to build an adapter to use Apple hardware cards on the 130XE. As the combination of the cartridge port and ECI provide most (if not all) of the 6502 pinouts, I would think these would be achievable without great expense. Although some cards would be essentially useless without heavily rewritten software, others, such as Applied Engineering's Ramworks II would be *very* useful. (Imagine 80 column output and up to 3 megs of external ramdisk or paged memory).

Although it has fewer items available to make it attractive, an adapter to use C-64 bus peripherals could also be of benefit...and likely very easy to make.

Lonnie McClure
Memphis, Tennesee

The actual diagnostic code is "hidden" ROM since it occupies the same memory locations as the Atari's hardware registers. The only way the Atari can run the diagnostic code is if it is transferred into RAM. When bit 7 of the PORTB hardware register (54017, $D301) is set to zero (as happens when the XL/XE's self-test is activated) the diagnostic code in ROM, at locations 53248 through 55295 ($D000-$D7FF), is copied into RAM at locations 20480 through 22527 ($5000-$57FF) and then executed. The cartridge area is located at locations 40960 through 49151 ($A000-$BFFF).

Therefore, the self-test, or diagnostic, code occupies only 2K of memory and resides on a ROM chip with other operating system routines, a distance from the cartridge area. I don't know what you had in mind, but I don't see how useful the diagnostic ROM would be even if it did indeed occupy the cartridge ROM area. You might be interested to know that 800XL/XE owners can replace the BASIC ROM chips in their computers to gain access to this cartridge area (in addition to via the cartridge port).

Regarding your questions about an adapter to use Apple hardware cards, I have not heard of any. While both the Apple and the Atari are based around the 6502 microprocessor, the two contain many other circuits and chips and corresponding hardware registers and clock speeds that are not at all compatible. Another aspect, which you hit upon, is rewriting the software—indeed, another major effort. It often turns out to be much simpler and more economical to build a product specifically for the Atari from scratch. You may be surprised to learn that the Atari has available to it virtually all of the important hardware goodies that the Apple has, including several 80-column boards, numerous ramdisks and memory expansion devices, hard disk drives, appliance controllers, light pens, digitizers, and even an add-on MIDI interface for musicians. You'll also find, in most cases,

continued on page 162

XLENT
continued from page 79

with a character" command instead of my intended command to shift the page a column to the right. Sadly, the program gave me no warning before it quietly eliminated all of my hard work. (Figure 1 ultimately had to be taken from the Typesetter manual itself.)

Documentation

The 25+ page instruction manual describes the various commands of both versions of the program, and offers a number of suggestions for using the program. Unfortunately, it does not get into the meat of many of the commands. The Sketch Pad section is particularly guilty of lack of description. We are told that CIR and SPH, for example, mean CIRCLE and SPHERE, and that is all the manual has to say about these commands. The best way to learn how to use the program, if not the only way, is by actually using it. But be prepared for a lot of aggravation in the beginning. And if you're a computer novice, you can forget it.

Conclusions

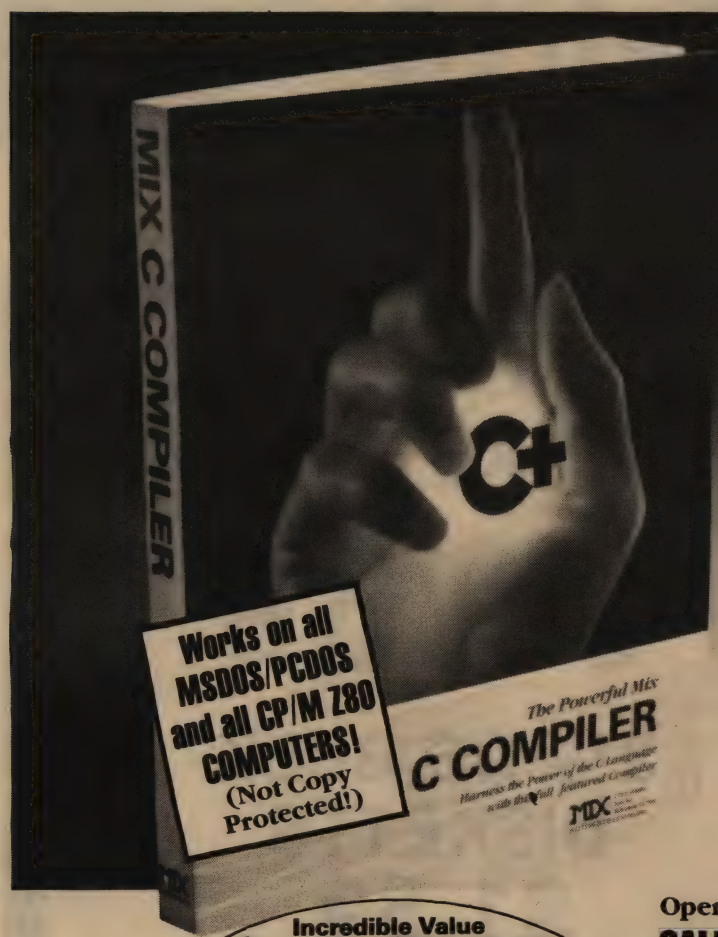
XLENT has designed a truly powerful graphics utility. For serious users, the creative potential is enormous. Typesetter's major fault, though, lies with its lack of user-friendliness, in both the program, and the instruction manual. Of course, XLENT's statement concerning ease-of-use versus functionality gives some rationalization to these problems. But, as I said with Page Designer, I would be most hesitant to recommend such a program to novice computer users. Experienced users, however, once familiar with the commands, should have a ball with Typesetter. A number of icon, font and layout disks from Johnny Masuda and from Irac Brickman are currently available. And already I have seen more than two dozen users' groups newsletters replacing their overused Print Shop graphics and characters with Typesetter pages. At $34.95 I rate the cost a bit steep. Or is this, perhaps, the real price we must pay for all of that chosen functionality?

Requires: 8-bit Atari with 48K, Disk Drive, Joystick. Author: Dennis Young and Len Dorfman. Price: $34.95. Warranty: 90 days, free replacement. Manufacturer: XLENT Software, PO Box 5228, Springfield, VA 22150.

Ratings for Typesetter

* Poor, ** Fair, *** Good, **** Excellent

Program Design	***
Practicality	****
Documentation	*½
Value for price	**½
Average	***



Works on all MSDOS/PCDOS and all CP/M Z80 COMPUTERS! (Not Copy Protected!)

C FEVER *catch it!*

It's becoming an epidemic . . . everyone is switching to C! First there were a few hackers, then came the college students, next the major software houses, and now the rest of the programming world. Programmers everywhere are infected with the desire for SPEED, POWER, and PORTABILITY.

It's time to face the inevitable. You're going to catch the fever too! When you do, give us a call. We've got the best cure—an illustrated guide to the C language, plus a complete program development system. Everything you need to master the C programming language . . . all at a price that's less than the cost of a book!

But don't let this price fool you. Our system is powerful; it compiles twice as fast as the others, is completely standard, and it's very easy to use. Most C compilers are designed for wizards. We have designed ours for you!

What do you get for a mere $39.95?

- **A 450 Page book filled with sample programs, plus . . .**
- **A fast, standard, full featured C compiler** that supports all data types and the latest features like bit fields, enumerations, structure assignment, and passing/returning structures.
- **A fast linker** that loads separately compiled files, searches libraries, and builds an executable program.
- **An extensive library of more than 170 functions** (including the standard C functions and the computer specific functions that provide direct access to the operating system and BIOS).
- **Tools that allow you to optimize** your programs for minimal space or maximum speed.

Incredible Value **AT ONLY $39.95** With 30 Day Money-Back Guarantee

Operators are standing by . . . Please use this Number for ORDERS ONLY!

CALL TOLL FREE FOR RUSH ORDER DELIVERY!

1-800-523-9520 IN TEXAS, PLEASE CALL TOLL FREE 1-800-622-4070

For Technical Support Please call 1-214-783-6001

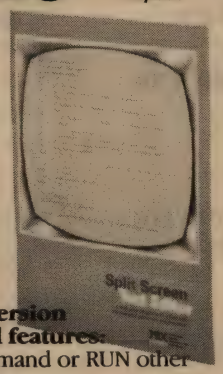
MIX Software, Inc. / 2116 E. Arapaho / Suite 363 / Richardson, Texas 75081

Or contact our Worldwide Distributors direct in:

Canada: Saraguay Software 1-416-923-1500 Switzerland: DMB Communication CH-1-825-53-29
Australia: Techflow 047-586924 France: Info/Tech 1-43-44-06-48

Split Screen Text Editor

an Incredible Value AT ONLY $29.95 *(Not Copy Protected!) Works on all MSDOS/PCDOS and CP/M Z80 Computers*



Our high powered editor is great for editing high level languages. **It works just like Micropro's Wordstar,™** but macros allow you to create your own custom editor, and the split-screen feature lets you edit two files at the same time.

The MSDOS/PCDOS version is loaded with special features:

- Execute any DOS command or RUN other programs from the editor.
- Quickly edit files as large as 300,000 characters.
- Compile MIX C programs directly from memory. The editor automatically positions the cursor to the first error in your program.

ASM UTILITY

an Incredible Value AT ONLY $10

Call assembly language routines from your C programs. The ASM utility works with Microsoft's MASM or M80 assembler. Macros make it easy! Works just as if you were calling a C function, and you can even call C functions from assembly language. Lots of useful assembly language functions are included as examples.

MIX software

RUSH REPLY ORDER FORM!

SAVE $14.95 Off Our Regular List Price!

Limited Time Only **$54.95** C Compiler & Text Editor

Description	Quantity	PRICE	Total Order
Split-Screen Text Editor	_____	$29.95	$_____
C Compiler	_____	$39.95	$_____
C and Text Editor (Special)	_____	$54.95	$_____
ASM Utility	_____	$10.00	$_____
Texas Residents Add 6.125% Sales TAX			$
Shipping Charges (See at Right)			$
TOTAL OF YOUR ORDER:			$

Please check method of payment:
☐ Check ☐ Money Order ☐ MasterCard/VISA

Your Card #: _____

Expires _____

Shipping Charges: (No charge for ASM Utility)
In the U.S.A.: Add $5.00 per Order.
In CANADA: Add $10.00 per Order.
OVERSEAS: Add $10.00 per Text Editor. Add $20.00 per C Compiler. Add $30.00 for combined C Compiler and Text Editor.

Operating System: *(Check one)*
☐ CP/M Z80 ☐ MSDOS/PCDOS

Specify Your Computer Name _____

Specify Disk Format _____

NAME _____

Telephone A/C (_____) _____

Street _____

City _____

State _____

Country _____ ZIP _____

MIX software
2116 East Arapaho
Suite 363
Richardson, Texas, 75081

Ask about our Volume Discounts!
Call 1-214-783-6001 S

ONE TIME ONLY

5¼ DSDD BULK DISKETTES

39¢

MIN-100
Includes Tyvek, Write Protect Tabs, Hubring (While Supplies Last)

3½ DS BULK DISKETTES

$1.69

3½ SS BULK DISKETTS
$1.59

PANASONIC PRINTERS

	SALE	LIST
KXP-1091 120 CPS, 22 NLQ, DOT MATRIX	$233.00	$399.00
KXP-1092 180 CPS, 25 NLQ, DOT MATRIX	$375.00	$599.00
KXP 1592 180 CPS, 38 NLQ, DOT MATRIX	$441.00	$669.00
KXP-1595	$679.00	$949.00
KXP-3131 17 CPS, DAISY WHEEL	$269.00	$499.00
KXP-3151 22 CPS, DAISY WHEEL, WIDE CARRIAGE	$399.00	$659.00

Modems

	SALE	LIST
Volks one (300 baud)	$55.95	$79.95

Smart Modems

Anchor Automation™

Volksmodem 12 300/1200 baud	$149.00	$299.00
†Signalman Express 300/1200 baud)	$199.00	$439.00
Volks i 300/1200 baud internal	$149.00	$199.00
Express i w/software (Internal 300/1200 baud)	$149.00	$299.00
Lightning 24 (300/1200/2400 baud)	$329.00	$599.00
Lightning i 300, 1200, 2400 Baud...Internal)	$319.00	

While supplies last.

Dealer inquiries welcome.
Quantity breaks available.

SHIPPING We will ship via UPS
PAYMENT MASTERCARD & VISA (add 2%), C.O.D. (add $1.90). CHECKS payable to Magnetic Media of New England
TAXES Mass. residents only, add 5%

Prices, terms, and availability subject to change without notice.

Magnetic Media of New England
P.O. Box 780
234 Cabot Street
Beverly, MA 01915
"Fastest Growing Distributor In The Northeast!"

OUTSIDE MASS:
800-992-0123
IN MASS:
617-927-0905

APPLE

Ask The Guru

by Don Lancaster

Let's start off with a few loose ends. First and most importantly, don't miss next month's issue of *Computer Shopper*. You just might find a thing or two in it that just may be of more than passing interest to you.

For those of you designing your own type faces for most any display, plotter, or printer, there's an interesting book you should know about. It is called the *National Bureau of Standards Special Publication #424* and supposedly has bunches of good info in it. And the price was only $3.

The only little gotcha is that this item is permanently out of print. Possibly you can borrow a copy from a library with a large government documents section. The original catalog number was SD C13.10.424.

I've also found a better way to open a Canon copier or laser printer toner tank for refilling. Instead of cutting or scraping a hole in the tank, you simply melt one. A miniature 12 watt soldering iron is ideal. What you do is "saw" a ½ inch circle and stop 9/10ths of the way around. Then you snap the disc off with a pair of small pliers. As before, you seal the hole with Scotch tape after refilling.

I heard a rumor that some sort of modification can be made to laser printers that allows foil hot stamping and embossing. I'll believe this one when I see it, but my, oh my, the potential. Let me know if you have any details on this.

Oh, yes. Some of you seem to be having trouble picking up Adobe's two *Postscript* books locally, so we are now stocking them as a special service for all of you *Computer Shopper* readers.

As always, this is your column and you can get technical help per the end box. I also have bunches of free stuff available for you when you call or write.

Let's move on to whatever it is that we are up to here . . .

Which Apple is Which?

This is a favorite question on the help line, and it has been a while, so here goes.

There are obvious differences between the Apple II, the II+, the III emulator, the old IIe, the new IIe, the old IIc, and the new IIc. If you pretest the machine your software is about to be run on, you can selectively add or remove features, letting you optimize your program for the target machine.

There are two ways you can identify the different machines. Let's look at each in turn.

The method that always works is to verify the four monitor bytes shown in Figure 1. Each byte combination shown is unique for that machine.

The second method works only under ProDOS and in-

continued on page 167

MACHINE	$FBB3	$FB1E	$FBC0	$FBBF
Apple II	$38			
Apple II+	$EA	$AD		
Apple III	$EA	$8A		
Apple IIe (old)	$06			$EA
Apple IIe (new)	$06			$E0
Apple IIc (old)	$06		$FF	$00
Apple IIc (new)	$06		$00	$00

Fig. 1 - Monitor i.d. bytes for various flavor Apples.

```
0 0 - -  0 - - -  is an Apple II
0 1 - -  0 - - -  is an Apple II+
1 0 - -  0 - - -  is an Apple IIe
1 1 - -  0 - - -  is an emulating Apple III
1 0 - -  1 - - -  is an Apple IIc

- - 0 1  - - - -  is a 48K machine
- - 1 0  - - - -  is a 64K machine
- - 1 1  - - - -  is a 128K machine

- - - -  - - 0 -  has no 80 column card
- - - -  - - 1 -  has an 80 column card

- - - -  - - - 0  has no compatible clock
- - - -  - - - 1  has a compatible clock
```

Fig. 2 - Using the ProDOS $BF98 i.d. byte.

Apple CP/M Column—Woz Graduates!

by Jesse D. Sheinwald

I just saw a note in my local paper that Steve Wozniak (Woz) had finally completed the requirements for his Engineering degree from the University of California, some fifteen years after beginning and about a decade after designing the Apple II computer.

Today, most new developments come out of the anonymity of large corporate research-and-development labs. The personal computer however, came about through the hard work of individuals, that inspite of the fact that they were told that it could not be done, created a revolution in their basements and garages.

The Apple was intended to be Woz's dream machine; everything that he wanted in a computer for himself. Through good fortune, good design and an open bus structure, it has evolved into something much larger than its designer ever intended.

Computers are different from other things. Most things, from household appliances to automobiles, require very little involvement; you use them as you need them. Computers require thought and involvement. You can be passive washing your shirts, you can be passive driving down to the supermarket, but you cannot be passive thinking about thinking and working with ideas.

People who drove the first Fords, did not refer to Henry Ford as "Hank." The first electric light users did not refer to Thomas Edison as "Tom." Again, computers are different. When you say "Woz," we all know who you mean. Thanks Woz.

Essential Software

Back before I bought my first computer I recall reading an article in a long forgotten publication that stated that you should think about the software you want to run before you consider hardware. I have since found this to be pretty good advice. In the extreme it means that your hardware needs are different if you are tracking the cash flow for General Motors or if you are only intent on playing Lode Runner.

Adding CP/M capabilities to your Apple opens up the CP/M library for use. It is a good synergetic mixture. For applications where there is good Apple software, you have the Apple. For applications where there is something good in CP/M, you can run CP/M. This dual purpose application is done in a more cost effective manner than having two separate machines.

Almost every business or trade today has its own specialized software. No matter what your business is, if you look in your trade journals, you will find someone marketing software addressed to your particular business needs.

That is fine for the specialists and the professionals, but what about all users? What are the things that everyone needs? More apropo to this column, what are the CP/M programs that all CP/M users should have or at least understand?

Word Processing

Almost every survey of personal computer usage shows that the number one use is word processing. After you have written with a good word processor, there is no turning back to your old typewriter. Writing with an ordinary pencil and paper becomes torture. There are many fine word processing programs available for the straight Apple, so what would be the advantages of getting a word processor for Apple-CP/M?

First, there is standardization. The defacto standard word processor for both CP/M and MS-DOS is WordStar by MicroPro International. Some people love WordStar, and others hate it with unbridled passion. WordStar is a powerful program. Like many powerful programs, it is command intensive and a bit of an ordeal to learn. However, once you understand how to use it, you will have access to one of the most powerful writing and editing tools around. In addition, you will know one of the most common commands structures used today. A number of very popular programs follow the same commands as WordStar. Knowing the command structure of a new program is a real aid in learning that program.

I have found knowing WordStar to be an advantage when testing out hardware. When you go into a computer store to look at some new machines, it is a good idea to test them out with some software that you understand. WordStar is so common, that almost any place that has the hardware to run it, has it. You can sit down at a strange machine and start to knock out text like a pro. It gives you a better feel for the machine than going through what the usual manufacturers demo disk has to show you.

As programs go, WordStar is a real old-timer. Even though the current CP/M version is 3.3, the program still has some rough edges and some faults. A few years back, some programmers from MicroPro broke away and formed the company Newstar. Newstar publishes a program called NewWord that is a WordStar clone with some of the problems fixed.

If you know how to use WordStar, you will feel at home with NewWord for most of the commands are virtually the same. While WordStar's operation and appearance give a clear feeling of its long history and development, NewWord is more refined, it is smoother, it has a tighter and cleaner look. It is not a carbon copy of WordStar. It is new from the ground up; it just emulates the WordStar structure. In addition, its writers have added a few additional

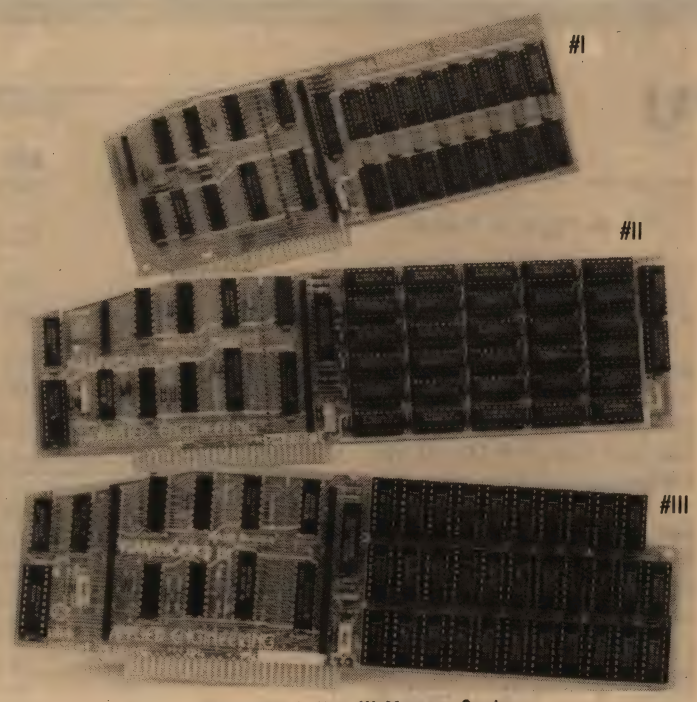
continued on page 173

The Next Generation of Apples

by Philip Chien

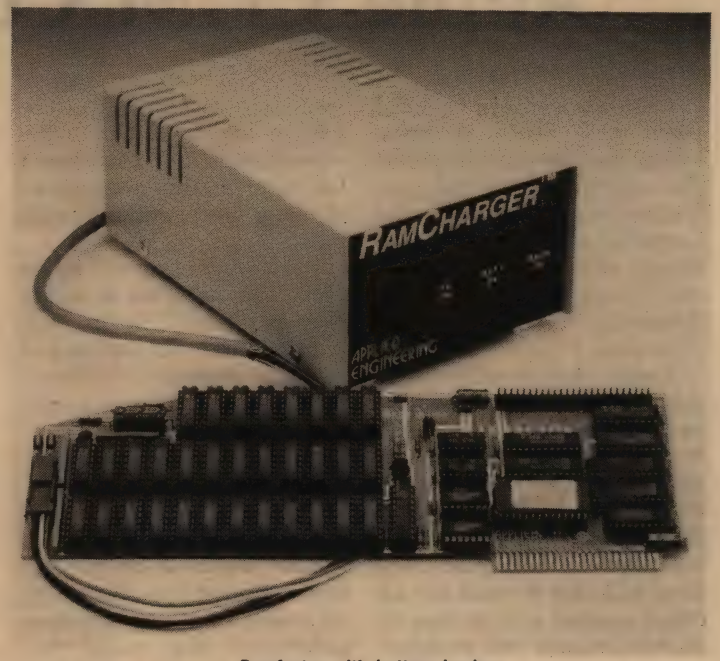
The fact that the Apple II computer is still popular almost ten years after its introduction is a tribute to its designers, and marketing people. For the most part the very latest Apple IIe, with all of its enhancements, is still compatible with and will run most of the programs designed for the original Apple II of 1977. Still, the Apple II family is starting to show its age, and needs several improvements if it wants to compete in today's business, educational, and personal computer markets. In 1977 a 1 Mhz 6502 CPU was a fine general purpose microprocessor for most applications. In 1986 a 6502 is a decade-old antique which is not used in any new computers. The 6502 has been replaced with the 65C02 in the Apple IIc, and enhanced Apple IIe. The 65C02 model is a low power CMOS chip which also adds a couple of new commands and corrects some of the 6502 bugs. It is still only an 8 bit microprocessor, operating at 1.023 Mhz, the same speed as the older 6502 it replaces, and it does not really increase the computing power of the Apple to any major extent.

A new family of microprocessors is now available which will improve the Apple's capabilities while retaining software compatability with present software and hardware. There are also Applle II emulators available for the Macintosh. Since the Mac uses a 68000 processor, those programs emulate the 65C02 through software—and operate half as fast as a normal Apple, not the best of solutions. If you already have a Macintosh this may be a way to tap into the Apple II software bank, but if you already have an Apple II, you would not want to use a 68000 to emulate a 6502. A better solution is the 65C816 family from Western Design Center. William Mensch, the designer of the 65C816, described the development of the chip as a result of his "mutual love affair" with the Apple II. It really is a genuine miracle. When the chip is first powered up it is in its emulation mode, and looks like a normal 8 bit 65C02 with several extra commands. Programs will operate normally, and the end user will not notice any improvements for most programs. But once its native mode is turned on the 65C816 operates as a 16 bit processor, with a potential address space of 16 Mbytes of memory! What it offers is the best of both worlds. In the emulation mode a 65C816 powered Apple looks and operates like any normal 8 bit Apple, with memory setup as separate 64K banks of memory. Once the 65C816 is put into its native mode it can operate at full speed, and all of the memory is addressed as one continuous bank of memory. Besides the true 16-bit 65C816, a special limited version is available. This is the 65C802 and it is pin compatible with the 65C02, but includes the extra 65C816 commands. You can remove the 6502 from your Apple's motherboard and replace it with the 65C802. Since it uses the same address and data lines as the 6502 it replaced, the new chip is limited to accessing 64K at any given moment and must use bank selection techniques to address extra memory. The banked memory is not a major limitation. Apple's have had bank switched memory as far back as 1978—when the Applesoft ROM card was introduced. The 128K Apple IIc and extended memory card equipped IIe both use bank switching, and even the IBM PC with its 8 bit 8088 processor can only access 64K at any given moment with its bank switching techniques. Standard programs written for the 6502 will not show any differences, but programs written for, and using the extra 65C802 commands can be four times faster than the programs they replace. The 65C802 is an excellent way for a present owner to upgrade a present Apple, or for that reason any 6502 based computer, but at best it is a stop-gap measure, similar to getting a new engine for an old car. Its a good way to get a couple of thousand more miles out of an old car which you've owned for ages, but what you really want is a new car with a much more powerful engine. The 65C816 is the processor for the foreseeable future for the Apple II family. (Then again, the 65C832 has been announced, a 32 bit version which is pin compatible with the 65C816. Once it becomes available, all you have to do is replace your 65C816 with it.) Diagram #1 shows the pinouts of the 65C816 and 6502. Diagram #2 shows status register coding.



Ramworks I, II & III Memory Cards.

So now you have a much more powerful Apple II, the problem that remains is now how can you put more memory into the Apple II to use all of that power? I gave that answer exactly one year ago, in my review of Applied Engineering's Ramworks I card (October '85 pg. 55). Ramworks, for anybody who still doesn't know, is an expandable alternative for Apple's extended 80 column card. The Apple extended 80 column card is limited to 64K of RAM, no more, no less. The Ramworks card starts with 64K of memory, but can be expanded. How much? The Ramworks I card, which was reviewed last year, has room for two banks of on board memory. Each bank can hold either 64K chips, or 256K chips. In addition, a piggyback board can hold another two banks for a grand total of 1 Mbte of RAM. The Ramworks II, which came out just after my review, has room on board for four banks of chips, and two banks on the piggyback board (up to 1 Meg on board, 1.5 Meg with the piggyback). Ramworks III is basically a re-tooling of the Ramworks II board to make the board compatible with European Apple's (it will still work on domestic units of course), but otherwise identical to Ramworks II. The memory expansion doesn't stop there. If the 2 bank piggyback board isn't enough for you, a 2 Mbyte piggyback is available which will expand Ramworks up to 3 Mbytes RAM. If that isn't enough, an external memory expansion board is available which will store up to 16 Mbytes of RAM. Memory isn't the only thing which has expanded—In the last year Applied Engineering changed from a small mail order firm providing a couple of Apple peripherals to the largest second-party, Apple manufacturer, and one of the largest memory expansion companies for any computer! Ramworks is the most popular memory expansion card for the Apple, and one of the biggest selling memory cards for any computer. In last year's article I stated that the maximum memory possible to put into an Apple was 1 Mbyte. This year the maximum has been increased by a factor of sixteen. Diagram #3 shows W65C816 Programming Model.



Ramfactor with battery backup.

With a Ramworks board, and expander your Apple can have as much as 16 Mbyte online, configured as two hundred fifty-six 64K banks in the eight-bit mode, or as one 16 Mbyte bank in the 16 bit mode. Personally I think that 16 Mbytes of RAM will be enough for me for the foreseeable future—but then again, in 1977 I thought that 8K of RAM was enough.

All of that memory is worthless without the proper programs which access the extra memory, and fortunately there are several programs available. Applied Engineering supports RAMdisk programs for DOS 3.3, ProDOS, Pascal, and CP/M in the 8 bit modes. In addition "Super Appleworks Desktop Expand" the most versatile, and powerful Appleworks expander available comes free with Ramworks. Besides expanding the desktop, SADE will also expand Appleworks' internal limits, load Appleworks into memory, support a printer spooler, and even print the time on screen if you have a ProDOS compatible clock. With an expanded Appleworks it is possible to have a 2.7 Mbyte desktop. Sixteen Megabytes though is much more than present programs support. That situation will change fairly soon though. Apple's new generation of Apple computers will use the 65C816, and plenty of operating systems, languages, and applications will become available.

If you can't wait for Apple Computer to come out with a 65C816 based computer, you can convert your present Apple into a 65C816 machine. A 65C816 card from Applied Engineering is available which plugs into your Apple II motherboard, and Ramworks card. In the eight bit mode the Apple II will address the memory on the Ramworks card as separate 64K banks. In the native 65C816 mode, the memory on the Ramworks will be remapped into one continuous bank of memory. The board is rather difficult to install, and should not be con-

continued on page 181

MACINTOSH

MacUniverse

by L.J. Kutten

Who Am I: I have recently gotten some electronic mail from new readers asking exactly who and what your glorious Universe Master is. Realizing that some of you have come into this column rather recently, I have decided to repeat my particulars. All of you old timers or those of you bored with biographies can jump down to the next section right now.

In real life your Universe Master is called L.J. Kutten. How I got to be known as "L.J." is a long, boring story (at least to me) so I will not go into the details. Lets just say it stands for whatever you want it to.

This column is called MacUniverse because our editor gave me exactly 48 hours to think up a title for it before he used his executive authority to name it. I wanted to go with "MacWorld" until my wife pointed out that was already taken (and the lawyer in me realized they would not look too kindly on me usurping their name). So I went out for a long walk and all of a sudden the name "MacUniverse" came to mind.

Now "MacUniverse" has a nice ring to it and it implies something bigger than "MacWorld" (which it isn't). Since it was entitled "MacUniverse" and I control what goes into it, I automatically became the Universe Master.

If you ever want to communicate with me by mail, you can do so in care of *Computer Shopper*, PO Box F, Titusville, Florida 32781 or send it to one of the following electronic addresses: Compuserve 70655,376; Source CPA108; and Genie LJKUTTEN. If you send a letter and want a reply, be sure to enclose a self-addressed, stamped envelope.

Now that your Universe Master has probably bored you to tears, we will go on to the main reason you are reading this column, to find out what is going on in the world of Macintosh.

New Finder/System Problems: Last week I spent three hours downloading the new Macintosh system software (e.g. Finder 5.3, System 3.2, et al) from Compuserve. I set up a separate volume on my hard drive to run it and immediately had all sorts of problems. It seems every time I tried to move more than one or two fonts into the System file, I would get an unrecoverable error (the error was "ID = 206, – 108") that trashed the system. Figuring I downloaded the bad files, I repeated the download from the GEnie network. The results were the same. Now it is one thing to have two bad downloads, but two bad downloads showing the same problem from two different telecommunication services is even a bit too much for me to swallow. So I left a message on the MAUG board on Compuserve telling my problem and asking for help. Within 24 hours I had an answer from no less an expert than Greg Ames, the 68K System Software Product Manager for Apple Computer. According to him my problem was a memory manager error and Apple was having this error pop up quite a bit with the new System 3.2 and Finder 5.3. It seems the system heap space was too small when modifying big system files. The cure was simple. Merely increase the system heap from 49K to between 51 and 64K. Now it only took me 8 hours to learn what a system heap was and how to modify it so I got the system working. I will not go into the details here but you need a program call FEDIT Version 3.05 or higher to fix it.

Now that I got it working, Apple is owed a big raspberry for this blunder. Surely it discovered this problem when beta testing this software. It had to be discovered by anyone who had a hard drive and tried to fill it up with fonts and desk accessories. So why in the heck did it release the system file as is? It would have been very easy for it to have uploaded a file with a larger system heap already set.

Besides the problem with the system heap I have a whole bunch of other minor problems. For example, the Page Setup command on Microsoft Word worked randomly. I finally realized that with a Laserwriter, AppleTalk had to be connected from the Control Panel Desk Accessory and the Laserwriter selected via the Chooser Desk Accessory before booting up Word. With it properly set and chosen, Page Setup worked, otherwise nothing happens. Under the previous System this did not matter. Other little gremlins inhabiting the system include random crashes when accessing desk accessories and system lockup if too many commands are given too quickly.

A Great Magazine: In my wanderings of MacDom, I have recently come across a magazine I can wholeheartedly recommend. Called *The Macintosh Journal* this magazine is the Macintosh equivalent of Consumer Reports. Each issue is dedicated one type of Macintosh and compares the various offerings.

The May issue's primary focus was in-depth examination of eight different spelling dictionaries. It compared them for such things as ease of use, performance, documentation, and support. Each program's strength and weaknesses are explained in detail along with the various benchmark test used to compile the results. Furthermore in the event you want to duplicate their results or try it on your own program, the publisher sells the necessary templates.

The Macintosh Journal cost $30 for 10 issues. It is published by B and P Publishing.

Home Macintosh Repairs: If you are a hardware hacker or otherwise want to do your own repairs to your Macintosh run to your local bookstore and buy a copy of *Chilton's Guide to Macintosh Repair and Maintenance* by Gene Williams. It covers most of the information you will need to perform routine maintenance on your Macintosh.

The book is comprised of nine chapters, three appendices, a glossary, and an index. The chapters include diagnosing the Macintosh, maintenance and repair of the disk drives, troubleshooting the main circuit boards, power supply problems, periodic maintenance, and the pros and cons of various peripherals. The appendices cover how to build a case popper (something that is absolutely necessary to do your own repairs), how to take the imagewriter apart, and how to do your own 1-megabyte memory upgrade.

It is extremely difficult for me to judge this book. The last time I took a solder iron to hand, the service technician said the only honorable thing to do to the circuit board was to bury it. With that background in mind, I liked this book. He constantly tells the reader to go slow and gives little hints on how to avoid serious damage. The only caveat I have with this book is that it is not that necessary for more people. The cost of an Applecare service warranty on a Macintosh is approximately $120 per year. At this rate it is more cost advantageous to buy the warranty than risk helping hands damaging the Macintosh.

Chilton's Guide to Macintosh Repair and Maintenance has a suggested price of $12.50. It should be available at most bookstores that have a large computer section.

Communications to Avoid: For the past year and a half I have been playing with a telecommunications program called inTouch. Originally published by Software Masters, it has gone through numerous permutations and is now published by Palantir Software, one of the major players in the Macintosh world. At $149 it is one of the more expensive telecommunication programs available. Unfortunately it is not the best.

Simplistically inTouch is a stand alone communication program that works on all Macintoshes. It allows the user to communicate with a variety of telecommunication services and to upload and download information. This review is concerned with version 2.05.

At first look, inTouch is one

continued on next page

Lower Gasoline Prices = $avings

by Randall Staponski

The decline in gasoline prices over the past several months is a pleasant surprise compared to the slower but relentless rise since 1973. Many published articles have discussed the billions of dollars which drivers will save. Unfortunately, none of them told me how much extra money I might have. Being a multicar family, I wrote a simple program to estimate these savings for a variety of conditions.

The reduction in gasoline prices has varied around the country and even yet has not completely stabilized. Also, future political developments in the U.S. and the Middle East may cause further changes in the price of oil. For these reasons the program asks the user to supply the reduction in gasoline price. Based on this reduction, a table is calculated

continued on next page

MILES DRIVEN	MILES PER GALLON 12	14	16	18	20	24	28	30	35	40
50 -	1.04	0.89	0.78	0.69	0.63	0.52	0.45	0.42	0.36	0.31
100 -	2.08	1.79	1.56	1.39	1.25	1.04	0.89	0.83	0.71	0.63
200 -	4.17	3.57	3.13	2.78	2.50	2.08	1.79	1.67	1.43	1.25
300 -	6.25	5.36	4.69	4.17	3.75	3.13	2.68	2.50	2.14	1.88
400 -	8.33	7.14	6.25	5.56	5.00	4.17	3.57	3.33	2.86	2.50
500 -	10.42	8.93	7.81	6.94	6.25	5.21	4.46	4.17	3.57	3.13
1000 -	20.83	17.86	15.63	13.89	12.50	10.42	8.93	8.33	7.14	6.25
2000 -	41.67	35.71	31.25	27.78	25.00	20.83	17.86	16.67	14.29	12.50
3000 -	62.50	53.57	46.88	41.67	37.50	31.25	26.79	25.00	21.43	18.75
4000 -	83.33	71.43	62.50	55.56	50.00	41.67	35.71	33.33	28.57	25.00
5000 -	104.17	89.29	78.13	69.44	62.50	52.08	44.64	41.67	35.71	31.25
6000 -	125.00	107.14	93.75	83.33	75.00	62.50	53.57	50.00	42.86	37.50
7000 -	145.83	125.00	109.38	97.22	87.50	72.92	62.50	58.33	50.00	43.75
8000 -	166.67	142.86	125.00	111.11	100.00	83.33	71.43	66.67	57.14	50.00
9000 -	187.50	160.71	140.63	125.00	112.50	93.75	80.36	75.00	64.29	56.25
10000 -	208.33	178.57	156.25	138.89	125.00	104.17	89.29	83.33	71.43	62.50
11000 -	229.17	196.43	171.88	152.78	137.50	114.58	98.21	91.67	78.57	68.75
12000 -	250.00	214.29	187.50	166.67	150.00	125.00	107.14	100.00	85.71	75.00
13000 -	270.83	232.14	203.13	180.56	162.50	135.42	116.07	108.33	92.86	81.25
14000 -	291.67	250.00	218.75	194.44	175.00	145.83	125.00	116.67	100.00	87.50
15000 -	312.50	267.86	234.38	208.33	187.50	156.25	133.93	125.00	107.14	93.75
20000 -	416.67	357.14	312.50	277.78	250.00	208.33	178.57	166.67	142.86	125.00
25000 -	520.83	446.43	390.63	347.22	312.50	260.42	223.21	208.33	178.57	156.25

FIGURE 1. Dollar savings for each $0.25 decrease in the price per gallon of gasoline.

MacUniverse
continued from page 85

heck of a powerful program. it allows the Macintosh to emulate the following terminal types: a standard TTY terminal, an ADDS Viewpoint/60, a Beehive BM5A, IBM 3101, Televideo 925, VT-100, VT-52, and Vidtex. There are four levels of eight function keys and one level can call up another level. The user has full control of data parameters including baud rate, setting the data, stop, and parity bits, selectable XON/XOFF control, and the like. File transfer protocols include MacBinary, Xmodem, Crosstalk, and inTouch's owns method (used for direct Macintosh to Macintosh communications).

At the operational level inTouch is a semi-intuitive program. While many users (especially those already knowledgeable about telecommunications) will be able to use the program without reading the manual. For others the program will be difficult to learn and use.

The documentation consists of a spiral bound book of 114 pages which attempts to explain the theory behind telecommunications and how to use the program. As such, it fails miserably. While I am not a programming expert, I am reasonably adept at reading between the lines in a manual in order to figure out how to use the program. With inTouch I have read three different manuals (the original from Software Masters and two from Palantir), and I still cannot understand basic functions such as automatic logons and downloading information using the Communications Command Language.

According to Palantir the heart of the program is the Communications Command Language which, in theory, allows inTouch to automate communication sessions. For example, if properly used it should allow me to automatically log onto Compuserve, go the Macintosh SIG, and download any new files. Unfortunately, I have never been able to get a single Communications Command Language procedure to work. What is worse is that inTouch even provides sample Communications Command Language procedures where, in theory, the only thing that needs to be changed is the phone number, user ID number, and password. I have made the changes and still been unable to get it to work.

Downloading presents similar problems. The program is only semi-HFS compatible. If a text file is downloaded, the user can control to what volume and file it is received. But if a MacBinary file is received all hell can break loose. Every time I do a MacBinary download the file visually ends on the desktop and not in any particular disk or file. Twice I have Finder copied the file from the desktop to what I thought was the appropriate file only to have the file totally disappear.

Finally the program is not that well designed. I can crash it regularly by pulling down the Setting Menu Bar and running the Auto-Execute command. This is simply unacceptable.

inTouch has done a fair job of implementing the Macintosh interface. All commands are accessible via pull-down menus. However, it would have been nice if Palantir had provided keys commands for the more frequently used commands.

All in all I cannot recommend inTouch. In its current format it does not even come close to the state of the art in Macintosh communication software. A user would be advised to consider another program.

Compuserve Material

This months Compuserve selection consists of two programs, HFS Directory and a Postscript tester.

HFS Directory: HFS/HD-20 Disk File Catalog is a shareware program that creates a text output cataloguing all the HFS files on a hard disk. It shows the volume name, each file/folder on the volume, the contents of each folder, and the name of each file/program in the folder. Additionally it shows the date the file/program was created, the day it was last modified, the type of file it is, and its size. This program is very useful to keep track of files since under the HFS operating system it is possible to have the same file name in two different folders.

The program can display the results in two ways: if an Imagewriter is attached, it can directly print the results out. It will not work with the LaserWriter. The second way is that it generates a word processing file that can be read by either MacWrite or Microsoft Word.

This program is shareware and is found in the DL1 database under PPN 70127,3673. The program name is HFSDR.BIN. The document file is HFSDR.DOC under the same PPN. If you like it, you should send $15 to the author.

Postscript Tester Version 1.1: Postscript Tester Version 1.1 is a program that allows you to send Postscript commands directly to an Apple LaserWriter using AppleTalk. Without this program the only way to send Postscript is to connect the RS-232 port of the LaserWriter to a Macintosh communication port (either modem or printer) and use a telecommunications program to send the file. This program removes that problem. It puts up an edit window and allows the user to send the contents directly to the LaserWriter. It will load and save files up to 32K and all standard editing commands are supported. It is found in the DL1 database as PSPRNT.BIN under PPN 70007,2272.

Products Mentioned In This Column

The Macintosh Journal - $30 for 10 issues
B and P Publishing
PO Box 1341
Provo, UT 84603-1341
801-375-4947
CIS ID: 76347,2301
Source ID: BDS285

Williams, Chilton's Guide to Macintosh Repair and Maintenance - Suggested Retail Price - $12.50 & $2.25 shipping and handling
Chilton Book Company
Chilton Way
Radnor, PA 19089
215-964-4000

inTouch - Suggested Retail Price $149.95
Palantir Software
12777 Jones Road
Houston, Texas 77070
800/368-3797

HFSDIR - Located in DL1 database as HFSDR.BIN under PPN 70127,3673
Shareware - $15.00
OITC
406 Riverside Drive
Melbourne Beach, FL 32951
CIS: 70127,3673

Postscript Tester Version 1.1 - Located in DL1 database as PSPRNT.BIN under PPN 70007,2272

Protecting Computer Software: Law and Forms - Price approximately $80
Kluwer Law Book Publishers
36 West 44th Street
New York, NY 10036
212/382-2855 ●

Lower Gasoline
continued from page 85

from which savings can be estimated.

In the Missouri Ozarks where I live, the price of gasoline has declined from $1.00 a gallon in December 1985 to about $0.75 in May 1986 for a reduction of $0.25 per gallon. Figure 1 is based on this $0.25 reduction and shows the table from which savings can be calculated. Find the miles you drive in the left hand column and the miles per gallon in the top row. The intersection of the column and row represents the savings.

As an example, I drive about 400 miles weekly and get about 28 miles per gallon. With the current $0.25 reduction in price, that means I am now paying $3.57 per week less for gas than in December. My wife's car gets about 24 miles per gallon and is driven about 1,000 miles a month for a monthly savings of $10.42. Between the two cars our gasoline bill has decreased almost $25 per month since December 1985.

The miles driven column has a wide range to allow weekly, monthly, or annual estimations to be made. The range for miles per gallon should accommodate all but the largest gas guzzlers and all but the stingiest subcompacts.

The program is written in Turbo Pascal, runs on a North Star Advantage, and is listed in Figure 2. The program consists of two procedures (subroutines) and the main program. The main program requests the user to enter the change in gasoline price. Procedure Initialize is then called to initialize the arrays for miles driven and miles per gallon. Control returns to the main program where procedure Tablecalculate is immediately called to calculate and print the table shown in Figure 1. No hardware or software features unique to the North Star are used and output is to an 80 column printer. The program should run with little or no changes on other machines running Turbo Pascal. It may also be modified as desired to accommodate special conditions or preferences. ●

```
TURBO PASCAL Program Lister, Copyright 1983 Borland International
Listing of: GASSAVE1.PAS

PROGRAM GASSAVE1(INPUT,OUTPUT);

(* PROGRAM TO ESTIMATE GAS SAVINGS GIVEN MILES DRIVEN, MILES PER GALLON,
   AND REDUCTION IN THE PRICE PER GALLON                                 *)

(* WRITTEN IN TURBO PASCAL FOR A NORTH STAR ADVANTAGE  *)

TYPE
   MILEST = ARRAY[1..23] OF INTEGER;
   MPGT   = ARRAY[1..10] OF INTEGER;

VAR
   MILES : MILEST;
   MPG   : MPGT;
   CHANGE, DOLLARCHANGE : REAL;

PROCEDURE INITIALIZE;
 VAR
  I,J : INTEGER;

 BEGIN
   MILES[1] := 50;
   MILES[2] := 100;
    FOR I := 3 TO 6 DO
    MILES[I] := MILES[I-1] + 100;
   MILES[7] := 1000;
    FOR I := 8 TO 21 DO
    MILES[I] := MILES[I-1] + 1000;
   MILES[22] := 20000;
   MILES[23] := 25000;

   MPG[1] := 12;
    FOR I := 2 TO 5 DO
    MPG[I] := MPG[I-1] + 2;
   MPG[6] := 24;
   MPG[7] := 28;
   MPG[8] := 30;
   MPG[9] := 35;
   MPG[10]:= 40;
 END; (* INITIALIZE *)
PROCEDURE TABLECALCULATE(MILESP:MILEST;MPGP:MPGT;DOLLARP:REAL);
 VAR
   I,J: INTEGER;

 BEGIN
   WRITELN(LST,'                                        MILES PER GALLON');
   WRITELN(LST,'MILES');
   WRITE(LST,'DRIVEN');
    FOR I := 1 TO 10 DO
     WRITE(LST,' ', MPG[I]:6);
   WRITELN(LST);
   WRITELN(LST);
    FOR I := 1 TO 23 DO
      BEGIN
        IF I <> 1 THEN WRITELN(LST);
        WRITE(LST,MILES[I]:5);
          FOR J := 1 TO 9 DO
            BEGIN
              CHANGE := MILESP[I]/MPGP[J] * DOLLARP;
              IF J=1 THEN
               WRITE(LST,' -',CHANGE:7:2) ELSE
               WRITE(LST,CHANGE:7:2);
            END; (* FOR J=1 TO 9 LOOP *)
         CHANGE := MILESP[I]/MPG[10]*DOLLARP;
         WRITELN(LST,CHANGE:7:2);
      END; (* FOR I=1 TO 23 LOOP *)
 END; (* PROCEDURE TABLECALCULATE *)

 (*  MAIN PROGRAM *)
 BEGIN
   WRITELN('ENTER THE CHANGE IN GASOLINE PRICE- FOR EXAMPLE A 25 CENT');
   WRITELN('CHANGE WOULD BE ENTERED AS .25');
   READLN(DOLLARCHANGE);
   INITIALIZE;
   TABLECALCULATE(MILES,MPG,DOLLARCHANGE);
 END. (* GASSAVE1 *)
```

FIGURE 2. Pascal program to estimate dollar savings given the reduction in gasoline price, miles driven, and miles per gallon.

SANYO

The Silver Box

by Richard Fujita

The Super 555 With The AT Drive

You have read what had transpired inside my Silver Box in the last column. The Silver Box has now evolved into an entirely different kind of machine, with the "Missing Link" and the Farrow Speed board now called 555S. With the help of V20-8, the latter can speed up the whole process to more than twice the speed of the IBM PC, approaching the speed of the Compaq 286! But do not try to measure the speed in the Sanyo GWBasic which is just slow.

The benchmarks should be written in no other than the assembly language to test the real inherent speed of the computer rather than testing the speed of the individual version of languages and the simple disk access speed without considerations to the modules operandi. The IBM PC is slow especially when writing to the disk, but, to understand the process you must know what's going on inside the computer.

PCDOS/MSDOS is normally set up so that it verifies every writing operation for record integrity unless this toggle has been switched off. However, some competitors changed the disk operation mode and so did do away with the verify process. If you compare the disk access speed of an Apple or Commodore with that of an IBM PC or Sanyo, all the computers must be programmed to verify every disk writing operation. Otherwise, it is an unfair competiton. You cannot compare the ability of a computer with another if some machines are allowed to cheat or rely on a language specially polished for the benchmark. The compaq GWBasic is noted to be very fast when running the Byte Benchmark programs. The other example is Turbo Pascal which has blinding speed executing the Byte Benchmark test programs.

Many of you must have pondered on the question of buying an IBM PC countless times, as I did. I finally bought one of the Taiwan clones which I named Clumsy Clone. The result was barely worth the money, since I do not use it often.

My Silver Box in the Super 555 configuration has RAM memory extended to 736K and the V20-8 CPU running at 8MHZ. It has one 360K 48tpi drive and two 700K 96tpi drives. One drive is the new Chinon F-506L, the so called AT drive. I would like to describe how I am using this AT drive in non-AT mode at this time and the possible future use of the full 1.2Mbytes capacity in the later part of this article.

Of the good things about Sanyo, the best thing going for the Super 555 is the Sanyo's clean touch keyboard. With this keyboard I can go at least twice as fast as with the Clumsy Clone. The Clumsy came with a keyboard built with the capacitive switching technology. Theoretically this technology is good. It has no wearing contacts. A dime sized aluminum foil travels up and down. When it bottoms out, the capacitance between two semi-circle electrodes on the pc board increases the RF current stars to flow and this action switches a gate.

The theory is good. There is no wear on parts, except the plastic stems and support surfaces. The latter two, however, can wear down as quickly as the mechanical contacts, or they can develop sticking tendencies in dusty or vapor laden atmosphere. That is as bad as worn out contacts. The worst thing I encountered in this Taiwan capacitance keyboard is that the switch travel distance is not even for most keys. In some, you can trip it by a casual touch and in others you have to depress the key almost to the bottom. When you type "E" very quickly, "R" or "4" can pop up after the "E," just because your tip of the finger has slid along the side of other keys. This is annoying. You must examine the keyboard closely before you buy any computer.

The Sanyo keyboard, more precisely the Fujitsu keyboard, is a simple switch type, a mechanical job. I studied why this keyboard is so fast and less fatiguing to type rapidly, and come to the conclusion that the secret is not in the switching technology, whether it is capacitive or conductive rubber like Commodore's, or mechanical. The secret is in the mechanical construction in which the key stem hits hard on the bottom when depressed.

It must bounce back giving back the traveling energy back to your fingers. Otherwise, the keys rob the striking energy from your fingers. The end result is slower action, and it tires your fingers quickly, or requires special mental effort to use keys. A soft touch keyboard is definitely not for finger-baning, fast typers like me.

I remember the day when I took my Silver Box out of the shipping carton and turned on-the power switch for the first time. The machine could barely run Wordstar with the two single sided drives. Furthermore, it could not update the Spellstar dictionary. I tried many tricks until I found the secret to do it by using a new formatted diskette with no files in it. I am amazed how slow Wordstar behaved, this was a great contrast from my eight year old 4MHZ, S-100 machine. The old Z80A scrolled a full screen in one half second. The new slow poke with 8088 took an unbelievable 5 seconds to do the same job!

Now the machine speed is good and the keyboard is good. What you require now is the ability to run the application programs. My kids use BASIC, but I do not. The Sanyo GW-Basic is one of the slowest on the benchmarks, unlike lightning fast Compaq GWBasic. They must have polished the routines used in those benchmark programs. The Lotus 1,2,3 works. The dBIII Plus did not run when my friend tried it on my machine. I don't know if this is because of the copy protection scheme utilized in the program or by some other cause. In any case, it did not run and I have doubts about purchasing it. There are other comparable programs available including some written in Turbo Pascal. I will try those pretty soon and you will see the results in this column.

The Memory/Clock Board

The beauty of the "Missing Link" is not only you can expand the memory beyond PCDOS/MSDOS 640K boundary, but also you have a quartz clock for automatic time stamp for all your files, and the incredible "vanishing" RAM which makes it possible to run any verison of the Sanyo DOS.

The latter is a great feature for anybody who still uses the high resolution (640x200) color screen Sanyo has given to this computer, because, as it stands now, all the versions of patched DOS (BIOS?) interfere with the color graphic function of the Sanyo Basic, producing purple color in the graphic mode, where the normal color is white. This means the patched DOS somehow kills the yellow VRAM field in the graphic screen only. On the picture tube screen Purple + Yellow is the White color.

The patched DOS, both the

continued on next page

Sanyo MBC 55X/IBM PC Printer Utilities

by Fred Blechman

Most microcomputer printers today have many built-in features (including different font sizes and types, character spacing, underlining, and sub/superscripts) and the ability to produce high-resolution graphics. However, invoking these features (especially the graphic features) can take elaborate programming.

Although some features can be accessed by use of printer switches, these are frequently hard to get at, and require turning the printer off to set. While in DOS or BASIC, commands can be issued by the knowledgeable programmer, but these are tricky to generate and will normally corrupt the screen display.

Producing a screen "text dump" (no graphics) to the printer can be a challenge on some microcomputers that don't have a keyboard command to perform this function.

J & M Software has three programs that make text and graphic dumps, and printer set-up, a simple task on the Sanyo MBC 550/555 micros. Two of these programs can also be used with an IBM PC or its compatibles.

Easy Dumps

Before I got my Sanyo MBC 550 in January 1984, I had been "spoiled" by easily being able to dump at least text to my printer. With my ancient TRS-80 Model I could dump graphics and text to an Okidata Microline 80 printer (which had TRS-80 block graphics characters in its character set) using a simple BASIC subroutine. My TRS-80 Model III used a three-key combination (SHIFT-DOWN ARROW-ASTERISK) to produce a text dump to the printer, or the Model I subroutine could be used with the Microline 80 for graphics.

Even my inexpensive Timex Sinclair 2068 Personal Color Computer (and the earlier Timex Sinclair 1000/1500/ZX81) dumped every screen dot to the printer with just a one-key command or COPY statement in a program. This included graphics as well as text. Even the miserable Coleco ADAM had a PRINT SCREEN text dump function built-in. Furthermore, I knew the IBM PC had a two-key (SHIFT-PrtSc) combination to send screen text to the printer.

But Not The Sanyo!

So it was a disappointment when I discovered my otherwise-fabulous Sanyo could do "none of the above!" Instead of individual characters or block graphics being held in single memory spaces as an ASCII number (a common "memory-mapped" technique), each of the 2000 character spaces on the screen (80 across by 25 lines) is constructed with eight 8-bit bytes (for a total of 16,000 bytes). Each byte is one line of the character in that space, and each bit in each byte determines if a dot is "on" or "off." This provides an 8x8 dot matrix (64 dots) in each character space, with a full screen of 640 dots across by 200 dots high (128,000 dots per screen.)

But that's not all. The Sanyo is always in the high-resolution mode, and produces any of eight colors for each dot. It does this by overlaying three color screens—red, green and blue (RGB.) Each screen uses 16,000 bytes, for a total of 48,000 bytes of RAM (random access memory) devoted to the display.

Therefore, even a "simple" text dump required fancy bit-diddling, best left to machine-language programmers. But "necessity is the mother of invention," and several wizard programmers produced text and graphic dump programs for the Sanyo, such as PrintScreen550 from A-OK and Freeze-Frame from

continued on page 195

The Zobex Hard Disk Controller

by Michael Russell

"A hard disk controller with 768k of RAM memory for the Sanyo 550 for $250?" I asked incredulously. "Yes," the voice of Sandor (pronounced "Shandor") Zoboki, the president of Zobex replied. He added that it came complete with software, and would control virtually any size or configuration of hard disk. Three days later, I had the Zobex Sanyo hard disk controller card.

The Zobex card, in addition to providing extra memory, is a hard disk controller card capable of controlling two industry standard ST-502 compatible rigid disk drives. The hard disk may be mounted internally or externally.

Due to the Sanyo's small case, internal mounting of the hard disk leave room for only a single floppy disk drive. For most users this means sacrificing an already installed drive. The reason you would wish to do this is economy: A separate hard disk case and power supply may cost as much as the drive itself. A single floppy with a hard disk may be inconvenient for some purposes, but is the standard configuration IBM uses in the XT and new AT. The only problem with this arrangement is that the power supply of a Sanyo 555 is not really strong enough to support a hard disk. Computers designed for use with hard disk drives, such as the XT, usually have bigger power supplies, because hard disks use more power than floppy drives. However, this is only the case for the first few seconds the computer is activated. Unlike the floppy drive, a hard disk is always spinning at a high rate of speed. When the drive is initially turned on, it must bring itself up to operating speed, which uses a lot of power. Once spinning at full speed, however, it is able to just idle along using no more power than a normal floppy drive. A smaller power supply is capable of running the computer—once it is running—so the extra power is used only for the first five or six seconds of a computers day. Unfortunately, these are also the seconds when the Sanyo wants to boot DOS, so an overload power supply will produce disk boot failures. To avoid this, any internally mounted hard drive must be of the new "low power" variety.

Mounting a hard disk externally adds some cost but frees the choices for the hard drive considerably: Virtually any hard disk may be used. Since "low power" hard disks are new on the market, they sell at a premium. By going external, older, full height drives may be used, and these are often found at close out prices. It is conceivable that the external drive might even save money due to the lower cost of the drive itself. You are also saved losing your second floppy drive.

The computer used in the Zobex testing had been expanded with an 800k floppy disk to supplement the standard 360k drive. It was important to keep both of floppy drives intact. A 360k disk drive is a must for most commercial self booting software, and to use other operating systems. Among these was the 360k disk with DOS that Zobex had with the controller. So the 360k disk drive had to stay. On the other hand, an 800k floppy disk drive is a handy tool for backing up a hard disk, and quite a bit of software had been stored in this format already. With these considerations in mind, external mounting was chosen. The Zobex board itself is quite well designed. It is fairly large for the Sanyo's case, but this size made the traces on the circuit board large and well separated. There were no "jumper wires" or other signs that the manufacturer had changed their mind about the design after production had begun—always a good sign. There are two rows of 256k memory chips on the Zobex board—adding 512k of memory to the Sanyo. This gives the 256k Sanyo its practicle maximum memory of 768k RAM. Considering that the direct access limit of the IBM PC is only 640k, this is a very respectable amount of memory indeed.

Because of the boards size, however, air flow is impeded inside the Sanyo case, and in warm places heat build up might become a problem. To guard against this, Zobex makes several practicle suggestions regarding opening up the ventilation ports on the sides of the case, and simple ways of upgrading the fan inside the case.

The Zobex board is the first in the computer industry to use a new generation of hard disk controller chips, centered around the Western Digital 2010. The size of the board is a result of it being designed with Autocad software on the IBM AT. It was the first board Zobex (a popular manufacturer of cards for the IBM and S-100 markets) had designed using computer assisted design.

Installation of the board is as simple as installing a video board. You need to open the case, loosen the screws that hold the disk drive plate in place, move the disk drives out of the way, and push in the Zobex board. Removing the cover plate marked "expansion" allows adequate room to run the cables outside of the machine.

The Zobex board uses industry standard hard disk controller cables—unfortunately not supplied with the board. These plug in to the rear of the board.

We tried the Zobex board on a variety of hard disk drives. The Zobex comes with a preset menu, allowing installation of a dozen types of standard drives. It also has a custom installation feature which allows you to format and run virtually any ST-502 compatible hard disk if a few simple questions can be answered about the drives characteristics. This is superior to many controllers for the IBM, which allow use with only a few type of drives, the characteristics of which are set with jumpers or switches. The Zobex software control adds considerable flexibility. One drive we tried, in particular, had defeated several attempts to be formatted using IBM controllers. Billed as a "10 meg hard disk" for the IBM PC it was actually an antique Tandon drive, of the type seen in the very first IBM XT's. Formatted, it was actually only a 7.8 meg hard disk, which threw fits into the jumper set controllers. The Zobex, however, handled it with flying colors.

It is a little tricky to get the drive switches set properly for Sanyo use. On all three drives tried (Qume, Tandon and Microscience) the settings differed from the IBM settings. We found Zobex to be very helpful in providing the necessary settings for each drive, and the information is also usually found in the hard disk drive manual, not always provided with the disk.

One minor oddity of the Zobex is that the red access light of the hard disk is always on. This is the same idea as the Sanyo's floppy drive lights—used to indicate use of the drives on most computers. Zobex explained that this was normal, and saved considerable circuitry on the controller card.

The additional memory worked very well. Standard Sanyo DOS will not address it, but a patch is provided by Zobex which solves the problem. DS DOS from Michtron used all the additional memory without patching.

There is an expansion port on the Zobex, but it does not come with a connector. We attached one, but were unable to get the Sanyo to work properly with both the hard disk controller and video board installed. This is not surprising, as neither device was specifically designed to work with the other. The problem appears to be one of memory conflict—both devices attempt to address the same area for different purposes, causing a crash.

If one is able to live without the video board, this card is an excellent deal. It provides large amounts of memory, and flexible hard drive capabilities to the Sanyo at a price allowing it to be upgraded at a cost equal to adding a hard disk to any other computer. The Zobex company was good at providing support, and the card itself appears well designed and tested. ●

Silver Box
continued from page 87

Missing Link patch and the new Sanyo 512K DOS, produce the same result only when the total RAM area exceeds the 256K size. This subject needs some investigation. If any reader can come up with an answer, you are welcome to share the knowledge with other users.

The Expansion Patches

Without some kind of patch, the Sanyo DOS 2.11 quits after sizing the memory field if it finds any memory beyond 256K. Whoever was responsible in writing the Sanyo BIOS, must have decided to deter the third party memory expansion. A bad idea, according to my rules of computer business. There are some memory expansion patches available other than the ones furnished by the two companies mentioned above. One such patch was published in the *Soft Sector* magazine was called MEGADOS. This name as a trademark belongs to a certain software company for their PCDOS and I doubt if this name can be used to call this patch in strict legal sense.

This Megados Patch has one flaw. If you have more than 736K memory and if you are using the video board, it puts the system codes right on top of the VRAM memory. You can see this as a colorful flower patch on the bottom of your color monitor. This happens because the patch does not recognize the VRAM area as the forbidden zone.

The idea of these patches are simple. In order to detect the memory top, the CPU checks every 256th memory cell. It reads the content into the AL register and inverts it. The content of the memory location then is inverted and they are compared. If they do not match, it may be a bad memory location or outside of the major area. If they match, the above process is repeated one more time before adding 100H to the RAM address. Eventually, the process will fit the RAM end and the segment address will be in the DX register. The DX register is then tested if it is above 4000H, the 256K boundary. If it is BEYOND 256K, the DOS jumps to a routine which ends in a jump to its current address. This is a trick which traps the CPU in an endless loop.

Since we identified the trapping code, to change it is a piece of cake for the Sanyo VB DOS. The branching operation starts at the address 2A26H when the IO.SYS is loaded by the DEBUG. The IO.SYS examines the DX register if it is beyond 4000H. The Megados patch eliminates the "Compare DX with 4000H" instruction and proceeds directly to set up the top memory for the operating system. This is where the problem sets in. You must insert a memory limit here so that the system will not go into the VRAM area. This is accomplished by adding "MOV DX, B800" which writes over the contents already in the register DX with data B800H, if the memory address in the DX is beyond B800H.

The Correct Patch

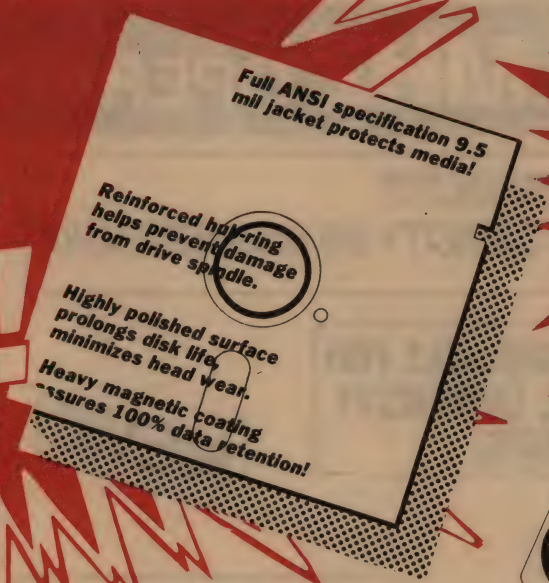
If you extend the memory by piggy back method using Northeastern Electronics' memory extension board which enables you to use up to 960K without VB and up to 736K with VB. This is probably the lowest cost memory expansion you can get which does not sacrifice the Sanyo screen and get you enough memory, say, more than 640K, to run a 400K RAM disk. Their phone number is (612) 331-1904 and contact Dick Stone. The only other thing you need to run the memory is a good patch. If you use any video boards, the IBM clone boards or the Sanyo VB550, you can

continued on page 190

PREMIUM QUALITY!

DISK SALE!

LIFETIME WARRANTY!



FROM 29¢

MasterCard VISA AMERICAN EXPRESS

WE DON'T SELL FANCY NAMES, BUT WE SURE SELL THEIR DISKS!

When you buy a name-brand disk, you pay for more than just the disk, you pay for fancy advertising, fancy packaging. But when you buy a UNITECH disk, you get a PREMIUM QUALITY, HIGH RELIABILITY, fully guaranteed disk, identical to disks that sell for many times our price! When you buy a more expensive diskette, you aren't necessarily buying a better product.

WHO MAKES UNITECH DISKS?

They are made by top USA makers, and should not be confused with low-end, seconds, or cut-rate disks. Since we are one of the largest disk buyers in the world, the manufacturers give us their best prices! In our agreement with the manufacturers, we can't reveal their names, but when you receive them you'll recognize these as among the highest-quality nationally-advertised disks!

UNITECH: THE BEST PLACE TO BUY YOUR DISKETTES

Unitech has extremely high standards of quality. People that buy Unitech disks are so pleased with our diskettes that they come back again and again! Word-of-mouth can make or break a company, and through our committment to excellence in products, service, and price, Unitech has benefited from an unprecedented number of referrals by satisfied customers. Our customer-service staff enjoys selling Unitech's high quality products at a pro-consumer company. We have received many letters complimenting our blue-ribbon customer service staff, and we're proud of them!

FAST SHIPPING!

Prices are per disk. Call for 5000+ price	BULK 100	BULK 500	BULK 1K	BULK 5K	BOXED 25	BOXED 100	BOXED 500	BOXED 1K
For the Apple II, II+, IIe, IIc #UDA	37¢	35¢	33¢	29¢	49¢	44¢	42¢	40¢
SS/DD for single side computers #UD1	39¢	37¢	35¢	33¢	52¢	46¢	44¢	42¢
DS/DD for IBM-PC and compatibles #UD2	41¢	38¢	37¢	35¢	54¢	48¢	46¢	44¢
DS/Hi-Density for IBM-AT #UAT	1.75	1.71	1.68	1.65	1.90	1.83	1.79	1.76
3½", single side for Mac #UD3	1.49	1.44	1.41	1.39	1.59	1.49	1.44	1.41
3½", double side for Mac & Amiga #UD6	1.95	1.91	1.88	1.84	1.99	1.95	1.91	1.88
5¼" SLEEVES, 24# white wove #SLV	4¢	3.5¢	3¢	2.7¢	SPECIFY SUFFIX "N"-"J"-"D" WHEN ORDERING DISKS!			
5¼" SLEEVES, white Tyvek #TYV	6¢	5¢	4.5¢	4¢				

PRICE vs. QUALITY

We've tried almost every brand of disk in the world, but we haven't found a more reliable, higher quality disk than the Unitech Disk. A labeled disk is not necessarily better, it's just labeled! Cheaper disks may seem like a bargain, but only until you try to use them. Unitech is so sure that our disks are 100% perfect that we offer our famous UNCONDITIONAL 30 MONEY-BACK SATISFACTION GUARANTEE, AND OUR LIFETIME REPLACEMENT WARRANTY!

UNITECH'S FAMOUS DISCOUNT CATALOG

Pages of unbelievably low prices on hundreds of computer supplies and accessories, ribbons, paper, add-on cards, computers, and more! Included with every order, or send for your free copy!

SHOP WITH CONFIDENCE:

Unconditional 30 day money-back guarantee on all items! Unitech disks also carry a lifetime replacement warranty!

PROPERLY PACKAGED AND PRICED!

You can buy our disks BULK (N-pak) with no sleeves, labels, or box; BOXED IN TENS (D-pak) or JUMBO BOXED IN 25's (J-pak). All BOXED disks come complete with a label for notations, sleeve, write-protect tabs and a reuseable box. Add 2¢ per disk for D-pak! UD3 and UD6 are poly-bagged.

NOTE: These prices superceed all previous prices, and are in effect until our next price list is published. Items sold by Unitech are subject to prior sale. Prices are subject to change without notice. We reserve the right to limit quantities. References to manufacturers or their trademarks are made solely for the purpose of compatibility. All returns require receipt.

© 1986 Unitech, Inc. All Rights Reserved.

HOW TO ORDER: Order by phone or mail, pay by MC-Visa-Amex-COD, or send check with order, minimum order $20, add $3 for shipping plus $2 if COD. Canada add $5 shipping. We can ship open account to schools and major firms with good credit, minimum purchase order $100, FOB Unitech. All orders MUST include daytime phone and STREET address. Customer service hours: Monday-Saturday 9:00 am to 5:30 pm. *All orders shipped within 2 business days after receipt. When in Boston/Cambridge, visit our retail store!

UNITECH
Toll Free
(800)343-0472

20C HURLEY STREET
CAMBRIDGE, MA 02141-2176
IN MASS (617)"UNITECH"

ATTAK-286™

HIGH SPEED 12 MHZ OPERATION

Software Selectable for 6,8,10, and 12 MHZ!

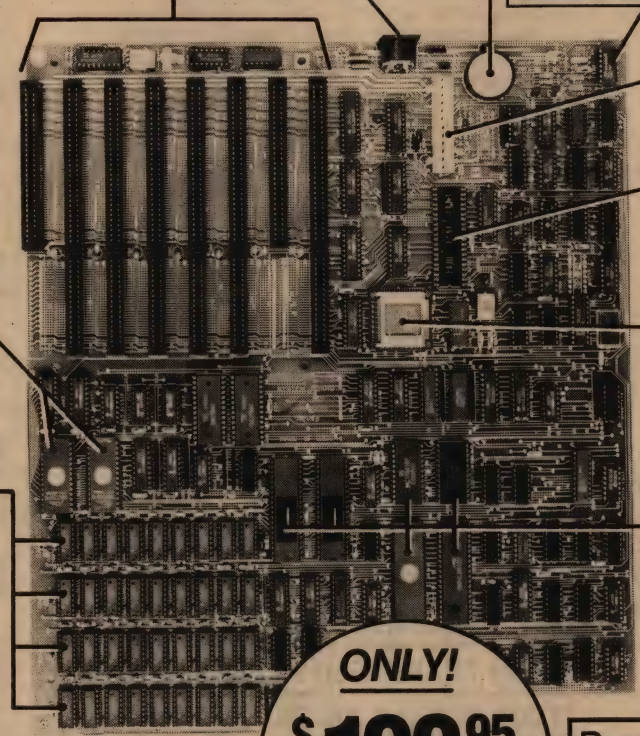
- *FULL IBM PC-AT* COMPATIBILITY!*
- *FOUR MEGA-BYTE RAM CAPACITY ON MOTHERBOARD!* *USING 1 MEGA-BIT DRAMS.*

QUANTITY DISCOUNTS AVAILABLE FOR QUALIFIED DEALER, OEM, UNIVERSITY AND CORPORATE ACCOUNTS.

NEW!

HIGH SPEED INDUSTRIAL GRADE COMPUTER FOR:

- Scientific
- Engineering
- Industrial
- Medical
- University/Education
- Artificial Intelligence
- Etc., Etc., Etc.



ORDER NOW!!

ONLY!
$199.95
EVALUATION BOARD KIT

☐ ATTAK-286™ FULLY ASSEMBLED (LESS ICS)	$499.95
☐ AT CASE 100% COMPATIBLE	$129.95
☐ AT POWER SUPPLY 192V	$129.95
☐ ATTAK-286™ TECHNICAL REFERENCE MANUAL	$ 29.95
☐ TURBO-SCOPE™ A/D BOARD	$ 99.95

Board Size: Standard IBM-AT*
Dimensions: 12 inch × 13.8 inch with 6 mounting holes to fit all AT compatible cases.

100% SATISFACTION GUARANTEED.
10 DAY MONEY BACK GUARANTEE IF NOT COMPLETELY SATISFIED!

AMERICAN EXPRESS · VISA · mastercharge · EURO CARD

ATTAK-286™ evaluation board kit highest quality multi-layer PC board with full assembly instructions and parts lists!

AIT™ CORPORATION
ADVANCED INTELLIGENCE TECHNOLOGY

4100 Spring Valley Road
Suite 400
Dallas, Texas 75244
(214) 490-0344

TERMS: We accept cash, checks, money orders and credit cards. Prices and availability subject to change without notice. Shipping and handling charges via UPS ground 50¢/lb UPS air $1.00/lb. Minimum charge $3.00.

*IBM and IBM PC-AT are trademarks of International Business Machines

© 1986 AIT CORP.

TEXAS INSTRUMENTS

The Inner Limits

by Glenn Davis

Remember last time that I told you that the Assembler is your friend? And you didn't believe me? Another way to make the Assembler more friendly is to name your registers. This just requires that you add an EQUate to the beginning of the file:

```
TOTAL     EQU 0
COUNT     EQU 1
POINTER   EQU 2
```

And the like. TI Forth uses this trick in its source code. It makes for very readable programs, as you'll see below. One thing you must watch out for: R0 cannot be used for index addressing as in MOV R8, @ARRAY(TOTAL). While it looks innocuous, this statement will always address @ARRAY, and never any other part of the list.

In addition to the alphabetic and numeric characters, "$" and "#" may also be used in names for labels. For example, $KEY is valid, and so is VAL#1. Other special characters will return errors.

Primed values can be used in expressions too, just like constants. Another way to find the right VDP address for loading the standard character set using GPLLNK is: ' '*8 + VDP-BAS. Try it. There are other applications of course.

Speaking of VDP addresses, certainly you've had to calculate screen addresses to display messages. Use an expression in the form Row*screenwidth + column. This allows expression of the screen position like Forth does (BASIC starts at one, while these will start numbering from zero). The fifth row down, second column in the 40-column mode would use: 4 + 1. An entire write sequence would be:

```
MESSAGE TEXT  'Display this message'
MSGEND  EQU   $
SCRWDT  EQU   40 - SCReen WiDTh
START   EQU   $
        LI    0,MESSAG
        LI    1,4*SCRWDT+1
        LI    2,MSGEND-MESSAG
        BLWP  @VMBW
```

Incidently, these registers do not necessarily need to be named. VMBW always uses the same registers, so little would be gained by naming them. As Leo Brodie, a prominent Forth programmer wrote in his recent book *Thinking Forth*, only consider using "tips" as they apply in your situation.

On another front (I think that one has been worn to death) let's talk about speed. The fastest RAM is the only CPU RAM in the console which is called "scratch pad RAM" (at addresses >8300 through >83FF). The workspace for the GPL interpreter is at >83E0, while the Sieve of Eratosthenes below uses >8300. All 8K of ROM is on the 16-bit bus too. Calling a ROM routine (when possible) will be faster than calling user-written routine that uses the same code because this is faster memory. Besides putting important things on the 16-bit bus by using scratch-pad RAM there are a few things you can do to speed up routines. Namely, by using a different addressing mode.

For instance, using register indirect addressing (*Rx) is faster than indexed addressing [@SYMBOL (Rx)]. When you've got a loop whose index is incremented, this can add significant speed. It takes a few more instructions to set it up, but those within the loop are executed faster. Using DEC or DECT and a JNE is about 16% faster than using CI, C, or CB and JNE. Here is an example of a slow loop to clear a region of memory:

```
SIZE    EQU   8192
BUFFER  BSS   SIZE
START   EQU   $
        CLR   R1
        LI    R2,SIZE
LOOP    CLR   @BUFFER(R1)
        INCT  R1
        DECT  R2
        JNE   LOOP
        RT
```

This version is much faster:

```
SIZE    EQU   8192
BUFFER  BSS   SIZE
START   EQU   $
        LI    R1,BUFFER
LOOP    CLR   *R1+
        CI    R1,BUFFER+SIZE
        JNE   LOOP
        RT
```

And this is a FAST loop:

```
SIZE    EQU   8192
BUFFER  BSS   SIZE
START   EQU   $
        LI    R1,BUFFER
        LI    R2, SIZE
LOOP    CLR   *R1+
        DECT  R2
        JNE   LOOP
        RT
```

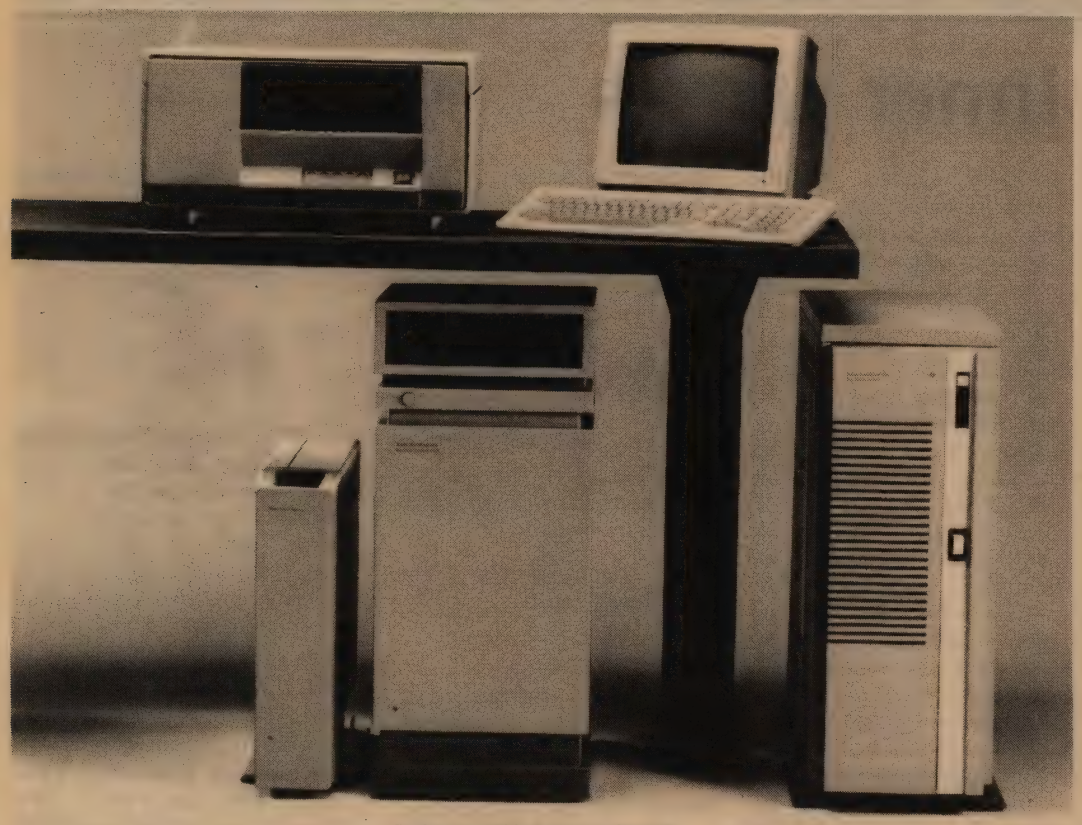
As with any other language, most often there are several ways to code a particular algorithm. There were three, and many more exist that are entirely different. Which is most "correct?" It depends on what restrictions you're under. Don't vote on the first one, though. My vote is for the third example; it is clear and fast.

Now turn your attention to the Sieve of Eratosthenes example code (Program 1). For those of you not familiar with this program, it is now a "classic" benchmark. *BYTE* magazine first presented the Sieve in September 1981 and did a follow-up article in January 1983. Ever since then,

continued on page 92

```
*
*
******
*      Sieve of Eratosthenes
*  in TMS9900 assembly language
*        by Glenn Davis
******
*
*


        DEF  START
TRUE    BYTE 1
FALSE   BYTE 0

SIZE    EQU  8190
FLAGS   BSS  SIZE+1
        EVEN

SIEVWS  EQU  >8300
GPLWS   EQU  >83E0
SAVE11  BSS  2

PRIME   EQU  0
I       EQU  1
K       EQU  2
COUNT   EQU  3
ITER    EQU  4
REG     EQU  5
BOOLE   EQU  6

        REF  GPLLNK,XMLLNK,VMBW,KSCAN
STATUS  EQU  >837C
KEY     DATA >2000
FAC     EQU  >834A
STR     EQU  >0014
CIF     EQU  >2300

SCRWDT  EQU  32

MSG     TEXT ' primes'
MSGEND  EQU  $
SIEVE1  TEXT 'Eratosthenes Sieve'
SIEVE2  EQU  $
WORK1   TEXT 'Working...'
WORK2   EQU  $
PRMPT1  TEXT 'PRESS ANY KEY TO CONTINUE'
PRMPT2  EQU  $
        EVEN

START   MOV  11,@SAVE11    SAVE SYSTEM
        LWPI SIEVWS

        LI   0,7*SCRWDT+7
        LI   1,SIEVE1            PUT UP INTO MSG
        LI   2,SIEVE2-SIEVE1

        BLWP @VMBW

        LI   0,9*SCRWDT+11
        LI   1,WORK1             PUT UP WORKING MSG
        LI   2,WORK2-WORK1

        BLWP @VMBW

        CLR  ITER
WHILE   INC  ITER          WHILE(ITER<=10)
        CI   ITER,10
        JH   END           {

        CLR  COUNT         COUNT=0;
        CLR  I             I=0;
        MOVB @TRUE,BOOLE

        LI   I,FLAGS
INIT    MOVB BOOLE,*I+     WHILE(I<=SIZE) FLAGS[I]=TRUE;
        CI   I,FLAGS+SIZE
        JL   INIT

        CLR  I
        MOVB @FALSE,BOOLE
END1    CI   I,SIZE        WHILE(I<=SIZE)
        JH   FINISH        {

        MOVB @FLAGS(I),REG
        JEQ  ELSE          IF(FLAGS[I])=FALSE

        LI   PRIME,3       {
        A    I,PRIME       PRIME=3+I+I;
        A    I,PRIME

        MOV  I,K
        A    PRIME,K       K=I+PRIME;

        AI   K,FLAGS
END2    CI   K,SIZE+FLAGS  WHILE(K<=SIZE)
        JH   DONE
        MOVB BOOLE,*K      {FLAGS[K]=FALSE;
        A    PRIME,K       K+=PRIME }

        JMP  END2

DONE    INC  COUNT         COUNT++; }

ELSE    INC  I             I++;
        JMP  END1          }

FINISH  JMP  WHILE         }
END     CLR  1             }
        MOVB 1,@STATUS

        MOV  COUNT,@FAC
        BLWP @XMLLNK       CONVERT TO FP
        DATA CIF

        CLR  REG
        MOVB REG,@FAC+11
        BLWP @GPLLNK       CONVERT FP TO STRING
        DATA STR

        LI   0,15*SCRWDT+10   VDP ADDR

        MOVB @FAC+11,1     CPU ADDR
        SRL  1,8
        AI   1,>8300

        MOVB @FAC+12,2     # BYTES
        SRL  2,8

        BLWP @VMBW         WRITE # TO SCREEN

        LI   0,15*SCRWDT+15
        LI   1,MSG
        LI   2,MSGEND-MSG

        BLWP @VMBW         WRITE MSG TO SCREEN

        LI   0,23*SCRWDT+3
        LI   1,PRMPT1
        LI   2,PRMPT2-PRMPT1

        BLWP @VMBW

$KEY    BLWP @KSCAN        WAIT FOR KEY
        MOVB @STATUS,0
        COC  @KEY,0
        JNE  $KEY

        CLR  0
        MOVB 0,@STATUS     RESET GPL STATUS BYTE

        LWPI GPLWS         RETURN
        MOV  @SAVE11,11
        RT

        END
```

TI Announces New 32-Bit Series Of Computer Systems



TI Series 1000 Business System

A new generation of computer systems was announced recently by Texas Instruments. The UNIX-based Business System 1000 Series will extend the company's computer line into a new class of high-speed, high-performance business applications.

The first member of the series, TI's Business System 1500, was unveiled during a press conference given in conjunction with the first VAR Congress, a trade show for computer resellers sponsored by the tenants of the Dallas-based computer market, InfoMart.

The Business System 1500 provides the most expandability, flexibility and processing power currently available in a UNIX-based, multi-user business computer. It includes multiple high-speed 32-bit processors, the ability to support up to 128 terminals and 4 billion bytes of memory address space. In addition, the Business System 1500 has an operating system based on AT&T UNIX System V that has been enhanced for multiprocessing and ease-of-use in commercial applications.

"The Business System 1500 is the solution for customers who want to take advantage of the UNIX V environment or who require large numbers of terminals for business applications," said Wally Rhines, president of TI's Data Systems Group. "The Business System 1500 combines advanced technology with industry standards in a computer that gives customers unprecedented configurability and power. With the addition of the Business System 1500," Rhines continued, "TI can support from one to 128 users through a broad offering of business computing products."

The Business System 1000 Series will continue TI's traditional strategy of family compatibility. Currently a COBOL System V programming language provides a compatible COBOL environment between the Business System 1500 and TI's Xenix-based Business-Pro computer. Applications written in Mico Focus Level II Cobol ET, VS COBOL Workbench or TI COBOL System V can be run on both TI's mini and micro products. This gives TI customers numerous options in configuring sytems to run COBOL applications, without the need to re-program applications software.

Flexible, High-Capacity Hardware

The keys to the Business System 1500's flexibility and configurability are the seven-slot chassis and a system bus that allows the use of multiple processors; the system can be tailored to the user's current needs, and processors can be added as requirements change. Each processor board contains a high-performance 32-bit 68020 microprocessor running at 16.67 megahertz and 16 KB cache memory for increased computing efficiency and extremely high throughput. Separate intelligent processors manage mass storage and peripheral input and output which frees the central processors for application processing. (Both the chassis and bus design were developed from TI's Explorer artificial intelligence computer.)

Each processor board uses 256K DRAM chips and advanced surface mount technology to provide 2 MB of on-board, dynamic random access memory; and add-on memory board can boost memory to 4 MB for each processor board. The multiple processors plug directly into a 32-bit NuBus system bus, which allows the processors to efficiently share the system load. The NuBus has a 37.5 megabyte-per-second transfer rate with a 100-nanosecond clock speed, making it one of the fastest system buses currently available. The NuBus provides a full 32-bit path for both physical memory and data transfer, and a virtual address space of 4 billion bytes (4 gigabytes).

The Business System 1500 can have up to 3.6 gigabytes of mass storage using two types of intelligent mass storage controller boards that plug into the NuBus chassis. A Small Computer Standard Interface (SCSI) board supports up to seven 5¼ inch 140 MB Winchester disk drives with a 60MB cartridge tape backup. This disk has a 30 millisecond access time. Another dual-ported mass storage controller board combines SCSI interface with a Storage Module Drive (SMD) interface to support up to seven 5¼ inch 140 MB disks and up to two 9-inch 515 MB Winchester disks with an average access time of 20 milliseconds. This disk is used in TI's current Business System 600 and 800 computers, preserving any investment that customers may already have in that peripheral. A single slot intelligent Communications Carrier Board supports EIA devices, modems, parallel printers, auto call units, and wide or local area communications options.

Terminal Concentrators Expand User Count

Terminal concentrators are used to increase the number of users attached to the system. The terminal concentrators are intelligent units designed for local terminal connection. Each terminal concentrator contains a microprocessor that off-loads part of the network management function from the system processor(s). Up to 16

continued on page 172

The Inner Limits

continued from page 91

BYTE has used the Sieve to test computer systems and language interpreters or compilers. What does it do? It finds prime numbers *fast*. If you missed this in your math education, it starts by eliminating all known non-primes (all even numbers, evenly divisible by two), and then the multiples of the next primes (multiples of 3, 5, 7, 11...). See the articles referenced below.

The Sieve can be coded in any language that can index arrays of numbers. This version is in 9900 assembly language. It is the fastest one I could create without changing the algorithm. (Note that there is a difference between modifying the algorithm and modifying the code used to implement the algorithm.) At 10.85 seconds for all ten iterations (an IBM-PC takes about 6 seconds), it is by far the fastest language for the TI. For comparison, c99 v2.00 takes 88.5 seconds, TI Forth takes 173, and BASIC takes nearly 4,000 seconds!

First look at the label MSG. This uses the TEXT directive to write a string of bytes into memory. The single quotes (apostrophies) delimit the string. The label MSGEND indicates the end of the string. The difference between these is the number of bytes in the string. While MSGEND and SIEVE1 both indicate the same address, they shouldn't necessarily have the same name since latter changes or additions may change the relationship of the strings. If a string is added between them, *every* occurence of either string would have to be found. Just below the label START is a sequence to write similar messages to the screen. The screen position is 7,7 (counting from zero) and SIEVE2-SIEVE1 gives the length of the string. If the string is ever changed, the program automatically changes with it. Otherwise every occurence of that string being written would have to have the count changed. Long programs would make that task difficult, to say the least.

Near the label INIT the routine sets the byte-array to true as the comments in "C" indicate. This is a very tight, fast loop. Near the labels END1 and END2 is the main part of the Sieve that strikes out multiples of primes. After the label END more messages are written to the screen and several system utilities are called (XMLLNK and GPLLNK) to do conversions. At $KEY the Sieve waits for a key press and uses COC (Compare Ones Corresponding) to make the comparison.

Type in all comments that are listed with any source code that you type in. When you have to come back to it later, or have somebody else make modifications to *your* code these comments will allow much easier modification. All too often I see people typing in routines and leaving the comments out. Though this may save some time in typing it in, it will cost you dearly later. While it may not be important on Sieve it's a good habit to get into.

I've covered the inner workings of the Sieve quickly because many of the things covered in the last "Inner Limits" are included in the Sieve, including the naming of registers to improve program readability. INC COUNT is used instead of the equivalent INC R3. Study this version of the Sieve. Figure out why things were coded the way they were. Can you improve on it? If so, I'd like to hear from you. The best way to learn assembly is to study code and then write your own. Good luck. ●

TIMEX-SINCLAIR

Sinclair Survival Column

by Mark L. Fendrick

Before you get the idea that we have abandoned the T/S 1000/1500 and T/S 2068 computers in favor of the QL, let me reassure you. As long as there are new products and developments concerning these micros you can count on *Computer Shopper* to bring you the news.

When Timex originally announced its second computer, it was nothing more than a Sinclair ZX Spectrum with the Timex/Sinclair 2000 name. All of the software written in Great Britain for that very popular home computer would be available for our new computer. However, thanks to the Spectrum's inability to pass FCC tests, the T/S 2000 was redesigned totally. Improvements were made in the ROM during this redesign which caused any software written in machine code to be inoperable on the T/S 2068. Since most games are written in machine code, this virtually eliminated the vast assortment of popular software available in the U.K.

At first it seemed as if some of the earliest games released by Quicksilva would be modified for the T/S 2068. Quicksilva had established an office in Texas and had actually released a few games, but when Timex pulled the plug, so did Quicksilva.

But Knighted Computers (707 Highland Street; Fulton, NY 13069; 315-593-8219) came to the rescue. Obtaining the rights to Quicksilva's entire line of Spectrum software, they continued the process which Quicksilva began.

Those of you who have been reading this column since its inception might remember my attempt to order Trader Trilogy from Quicksilva upon obtaining my T/S 2068. This adventure was extremely popular on the T/S 1000 when it was the only Timex computer, and when it appeared in one of Quicksilva's flyers for the T/S 2068 I ordered it only to find out that the translation had not yet been completed. I wound up purchasing another adventure (Smugglers Cove) and awaited Trader's release. As you may have figured out by now, this translation was never completed—by Quicksilva. However, it is now on Knighted Computer's list of Spectrum games which have been modified to work on a standard T/S 2068.

Knighted Computer's translations have a number of benefits over using a ROMSWITCH, Spectrum Emulator or Spectrum ROM. First of all is the obvious advantage of not having to spend the extra money for one of those add-ons for your American computer. The second benefit is what makes these translations so worthwhile. The games on the Spectrum do not utilize the joystick ports built in to our T/S 2068's although you can have joystick control by adding one of the many joystick interfaces available for the Spectrum, such as the Kempston which has become the standard. Knighted Computer has very logically modified these games to be able to read input from the T/S 2068's joystick ports.

One of the first of these games which I had the opportunity to try was the Trashman. A very simple premise, you are a prospective trash collector and have been given a street in which to collect and empty the trashbins. Along the route you will have to beware of obstacles such as cars, bicycles and dogs. Running into one of these can slow you down (as in the case of the bicycles and dogs) or kill you (if you get hit by a car). Your truck arrives with you and slowly heads down the street. You must collect the trash from both sides of the street and empty each trash can into the truck before it finishes its trip. You may gain extra points along the way by helping the housewives with the small chores they may ask you to do. If you successfully complete your assigned street, you get assigned to another, more difficult street. As with most games of this type, there is a high score table into which you may enter your name upon completion.

Although it doesn't sound as spectacular as some of the newer arcade type games, Trashman has proved very addictive. So addictive, in fact, that a sequel has been released—Travels with Trashman. Both Trashman and Travels with Trashman have been translated and are available from Knighted Computers.

Two of the more exciting games translated by Knighted Computers are Fighter Pilot and Night Gunner—both from Digital Integration.

Fighter Pilot is a realtime flight simulation based upon U.S. Air Force's F-15 Eagle. This simulation offers many of the features found on modern flight simulations including 3-D view from the cockpit, full aerobatic performance, air-to-air combat, crosswinds, turbulence and blind landing. There is a training mode for each of the options in Fighter Pilot which allows you to learn the controls and their effects under less than the most demanding conditions. You are also offered different pilot ratings for varying levels of skill. Night Gunner is based on the Avro Lancaster four-engine bomber, although it is not intended to be a true simulation of flying this plane.

Night Gunner is an action packed arcade-style game based on a Second World War scenario. You are the gunner and bomb aimer whose task is to defend your plane against enemy attack and destroy the ground targets in 30 different missions. The rewards are high for the expert marksman and the going gets tougher on each new mission.

Both games have a large number of controls which you must learn as well as some fairly technical aspects connected with flying. As in the U.K. where they are played on the Sectrum, you have the option of choosing either joysticks or keyboard controls. The controls are complex and offer quite a challenge for those willing to accept. There are also a number of cockpit readouts which you must monitor and respond to.

Knighted Computers latest coup has been the obtaining of the U.S. rights to Durell's line which include their popular games Turbo Esprit and Saboteur.

Also distributed by Knighted Computer is a program entitled Thoroughbred Handicapper. This program applies handicapping techniques and the power of a computer to the rating of thoroughbred horses. It is not a magic formula, but the author claims that using the computer wisely should improve your performance at the track.

The program itself uses eight different criteria for rating horses, relying heavily on their performance last time out on a fast track. With a little practice you will be able to handicap a race in only a few minutes. All you need is a copy of the Daily Racing Form and a copy of the track's program which contains the horses' post position and jockeys. (This program is only to be used when the track is classified as fast.)

When using this program you will need to know some information which must be entered when prompted. This data includes; race distance; half mile time; final time; winner; weight last race; weight this race; current jockey ability; jockey ability last race; post position this race; beaten favorite factor (explained in manual) and class: up, down or same.

Given this information, the

continued on page 94

HP Introduces DraftPro Plotter

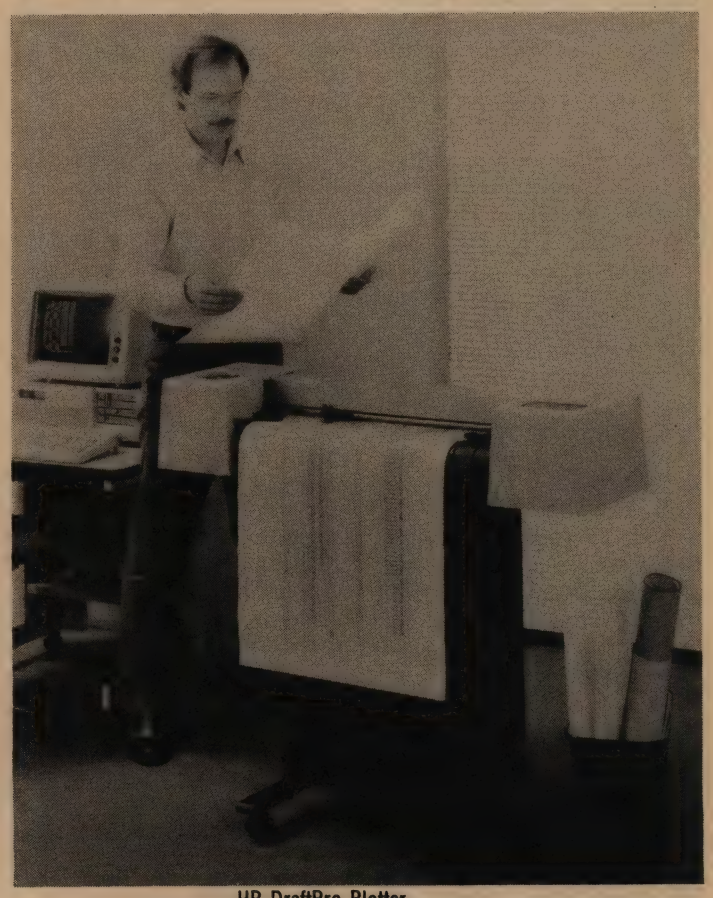
Hewlett-Packard Company recently introduced its first plotter specifically designed for the low-priced PC-CAD market. The U.S. list price is $5,400.

The new HP DraftPro plotter (HP 7570) was developed for budget-minded users such as small architectural and engineering-design firms, small departments in larger companies and educational institutions.

The DraftPro is compatible with most popular personal computers including the IBM PC, HP Vectra PC and Apple Macintosh.

The product design incorporates plastic-injection molding and VLSI electronics. This reduces the overall parts count and therefore the number of potential failure points resulting from continual daily use. It also produces a product with no mechanical or electrical adjustments.

continued on page 94



HP DraftPro Plotter

Borland Beefs Up Turbo Pascal;Bundles In Options At $99.95

Borland International, Inc., has announced that its Turbo Pascal language development system for IBM PCs and compatibles will now include two powerful enhancements previously marketed by the software publisher as options at an additional price. Turbo Pascal now includes Binary Coded Decimals (BCD), and support for the 8087 math co-processor, bundled in at a $99.95 total price. Borland began offering BCD and 8087 support options, in direct response to a high level of end user interest, when it released Turbo Pascal Version 3.0 in March, 1985. BCD is ideal for developing business applications such as spreadsheets, where a high degree of numeric accuracy is critical. Support of the 8087 math co-processor is essential for heavy number-crunching applications. There are currently more than 400,000 Turbo Pascal users worldwide, from students to professional programmers.

Prior to the availability of this special bundled version, customers could purchase Turbo Pascal alone at $69.95; with either the BCD or 8087 option at $109.95; or with both options at $124.95. With the new version they can get the total package and save up to $25. Customers who ordered Turbo Pascal and any combination of these options direct from Borland between May 1 and July 1, 1986 at previous prices can contact Borland to receive an upgrade credit with their new Turbo Pascal. Registered owners of Turbo Pascal Versions 1.0 & 2.0 can upgrade to Version 3.0 in the new bundled version for $40.00.

Dealers and distributors must contact Borland before September 1, 1986 in order to upgrade to the new Turbo Pascal.

The new Turbo Pascal is available immediately, and can be ordered direct from Borland or through dealers and distributors of Borland products worldwide.

For more information, contact Borland International, Inc., 4585 Scotts Valley Drive, Scotts Valley, Calif., 95066. Telephone (408) 438-8400. For orders or dealer inquiries, call (800) 255-8008; in California, (800) 742-1133.

Mention that you read about it in *Computer Shopper*. ●

Sinclair Survival
continued from page 93

computer will rank the horses in order. You have a limit of 15 horses each race.

The Wagermaster is a companion program which comes with the Handicapper program. It provides a quick and easy way to calculate racing payoffs at various odds. It will also display a variety of betting options for daily doubles, exactas, trifectas and other multiple bet races.

As with all of Knighted Computers' software this is well documented. Also available for harness and greyhound handicapping.

Knighted Computer also distributes other software for the T/S 2068 that is not in the fun and games area. One of these is The Complete Machine Code Tutor.

Originally written for the Spectrum by New Generation Software of Bath, England, Knighted Computers has applied their expertise to modifying it to be compatible with the T/S 2068. The program takes up four sides of two cassette tapes.

The tutor portion of this program is arranged in 35 lessons. These lessons include all the instructions available on the Z80 processor which runs the T/S 2068. Each instruction is covered on screen and followed by example programs which you may use as exercises and modify them using the knowledge gained in the lesson. There are safeguards built in to prevent a system crash resulting from your modifications. Lessons cover such topics as registers and memory; register pairs; carry flags; zero flag; conditional and unconditional jumps; calls to subroutines; hexadecimal notation; binary; parity; block instructions; interrupts and much more. You can choose the lesson you wish to view and go straight to it without having to start at the beginning until you get to the point you want to start your session.

There is also a simulated editor in which you may try out what you have learned without the possibility of a bad piece of coding producing a system crash.

This machine code tutor comes in a plastic case containing both cassette tapes and a 22 page manual. If machine code has always alluded you (as it has me) perhaps The Complete Machine Code Tutor will show you the way.

If you don't want to learn machine code but want the speed which is derived from such programming, Knighted Computers also distributes the Zip Basic Compiler. A compiler is a program which converts BASIC into machine code. Ideally, the machine code performs in exactly the same way as the BASIC program—but much more quickly.

When you first load the Zip compiler, a demonstration program will occupy lines below number 5000. You can run this program to see how slow it executes in BASIC and then compile it and see how the compiled version runs. A demonstration game which can be compiled is recorded on the tape immediately after the compiler itself.

You can save a copy of the Zip compiler and its library of routines for use with your own programs. The program you wish to compile must be less than 13K in length and contain no lines numbered higher than 4999.

As Zip compiles a program the listing will scroll up the screen as the compiler checks for obvious errors. A message will appear immediately following each error. If no such errors are found Zip will start generating machine code. This time the current line number appears along with the number of bytes of machine code generated. Additional errors may be detected at this stage and error messages are produced. If the compilation takes place without any errors being detected you will see the message "ZIP HAS FINISHED." User defined graphics may also be saved along with your program.

Zip is sensitive to addons which may produce system crashes, so if this occurs try running your program without each peripheral. Zip Compiler may be used along with other machine code programs such as toolkits or assemblers by following the instructions included with Zip.

The following are benchmark tests performed using Zip Compiler. The results are listed in seconds.

BENCHMARK TEST	ZIP	BASIC
1) For-Next Loop	0.030	4.88
2) If Loop	0.065	9.02
3) Variable Arithmetic	0.197	21.93
4) Constant Arithmetic	0.110	20.68
5) Subroutine Call and 4	0.118	25.22
6) Nested Loop and 5	0.300	62.80
7) Array success and 6	0.470	89.96
8) Math Functions	N/A	25.07

Benchmark tests 5 through 7 contain the coding of the previous test plus some additional statements.

The Zip Compiler occupies about 16K including variables and REMarks. Once loaded you are left with 12.5K for the program to be compiled and 10.5K for the generated machine code. Zip recognizes 45 Sinclair BASIC keyboards so some were omitted in the interests of speed and simplicity. You may use up to 26 single letter numeric variables and 26 arrays. Zip allows all of the usual arithmetic operators (+,–,*,/) but only stores whole numbers between –32767 and 23767. No decimal arithmetic is allowed. Strings and streams may not be used. RND and INKEY$ may be replaced by routines listed in the manual.

A few restrictions must be followed while using Zip and these are described in the appendix.

As with all compilers, you must be aware of its limitations or you will be disappointed. Compilers don't replace the ability to produce your own machine code programs, but if you stay within the compilers restrictions they can work wonders with your BASIC programs.

Be sure to mention that you read about these programs in *Computer Shopper* when you write for a copy of Knighted Computer's catalogue. ●

HP Introduces
continued from page 93

Stringent Environmental Testing

Environmental testing included operation of the plotter at temperature extremes of and 55 degrees Centigrade, subjecting it to a 25,000 volt shock, exposing it to a blow torch, and jolting it with 50 times the acceleration of gravity.

In addition to reliability, the new DraftPro plotter provides high-quality, easy-to-produce output on architectural and engineering C/D-sizes and A1/A2 metric sizes.

Both first-time and experienced plotter users can produce technical drawings with DraftPro, a personal computer, and any of the widely used CAD software packages—such as AutoCad, Anvil-1000 and VersaCAD—that support the new plotter.

Though PC-based workstations are less expensive, they are not less professional, Richard A. Mayes, HP's San Diego Division marketing manager said. High-quality, multicolor drawing on paper, vellum or polyester film can be achieved with DraftPro's .0005-inch mechanical resolution and .2 percent accuracy.

Pen-sorting Capability

DraftPro also includes pen-sorting capability, independent of software, which allows the plotter to draw a full buffer of vectors for one color before proceeding to another color. This reduces plot time by minimizing the number of pen changes. The new device features 2g pen acceleration and 15 inches per second (IPS) pen speed.

An eight-pen carousel that holds and automatically caps pens also saves the user time. Pens are available in a variety of colors and in both liquid ink and fiber tip.

The plotter also has a simple paper-loading procedure, front-panel controls that can be mastered in minutes, and industry standard HP-GL for user programming. An RS-232-C interface comes standard with the plotter. The HP-IB interface and the Japanese Kanji character set are available as plug-in accessories.

Easy Moving and Space Saving

The HP DraftPro plotter is easy to move and requires a minimum amount of space. It weighs 66 pounds (30 kg) and measures 44.9 inches (1,140mm) wide by 20.5 inches (520mm) deep by 40.6 inches (1,030mm) high. With the introduction of the HP DraftPro plotter, HP's line of drafting plotters has been expanded to four models—the D-size (A1) HP 7580B, the E-size (A0) HP 7585B, the roll-feed HP 7586B, and the new low-priced DraftPro unit.

Backed by a 90-day, on-site parts-and-labor warranty, the plotter is supported by HP worldwide service, with availability of support for at least 10 years after purchase. Delivery is two weeks ARO.

For further information call Hewlett-Packard Company sales office listed in the telephone directory, white pages.

DraftPro Plotter (HP 7570) Specifications

Media

Paper, vellum, and double-matte polyester film. Widths from 550mm to 640mm. Lengths from 400mm to 1000mm. These measurements include A2/C/architectural C- and A1/D/architectural D-size media.

Margins

Expanded Mode 5mm (0.2 in.) on three edges; 31 mm (1.2 in.) on the fourth.

Normal Mode 15mm (0.59 in.) on three edges; 39mm (1.5 in) on the fourth.

Pens

Fiber-tip, disposable liquid-ink, and refillable liquid-ink drafting pens. Eight-pen carousel, automatic pen changing and pen capping.

Resolution

Addressable 0.025mm (0.001 in.) 081886. ●

NEW FROM Compuclassics

SOFTWARE

WORD PROCESSORS
LEADING EDGE
Word Processor with Merge & Spell 79.00
LIFETREE
Volkswriter 3 159.00
MICROPRO
Wordstar 179.00
Wordstar Propack 249.00
Wordstar 2000 245.00
MICROSOFT
Word (Version 3) 279.00
MULTIMATE
Multimate 235.00
Multimate Advantage 319.00
SATELLITE SOFTWARE
Word Perfect 219.00
Word Perfect Library 59.00
WORD PROCESSING UTILITIES
BORLAND INTERNATIONAL
Turbo Lightning 62.00
LIVING VIDEOTEXT
Thinktank 99.00
MAX THINK
Max Think 49.00
WRITING CONSULTANTS
Word Finder 60.00
DATA BASE MANAGEMENT
ASHTON TATE
dBase III Plus 419.00
BORLAND INTERNATIONAL
Reflex 85.00
LEADING EDGE
Nutshell 69.00
M.D.B.S.
Kman II 299.00
Kman Bundle 369.00
MICRORIM
RBase 5000 269.00
Clout II 145.00
RBase System V CALL
DATABASE UTILITIES
FOX & GELLER
Quickreport 145.00
NANTUCKET
Clipper 359.00
SOFTWARE TOOLS
Viewgen 49.95
SPREADSHEETS/ INTEGRATED SOFTWARE
ASHTON TATE
Framework II 429.00
COMPUTER ASSOCIATES/I.U.S.
Supercalc 4 295.00
DIGITAL RESEARCH
GEM Draw 159.00
GEM Collection 119.00
GEM Desktop 32.00
LOTUS
Lotus 1-2-3 Version 2 339.00
Symphony 449.00
MICROSOFT
Multiplan 129.00
MIGENT SOFTWARE
Ability 59.00
PAPERBACK SOFTWARE
VP Planner 59.00
SOFTWARE GROUP
Enable 359.00
SOFTWARE PUBLISHING
PFS File, Write, Plan 80.00 each
PFS Report 69.00
SYMANTEC
Q & A 225.00

SPREADSHEET UTILITIES
CAMBRIDGE CO-OPERATIVE
Spreadsheet Analyst 75.00
LOTUS
1-2-3- Report Writer 115.00
TURNER HALL
SQZ 59.00
PRESENTATION GRAPHICS
AMERICAN SMALL BUSINESS
Prodesign II 199.00
BLOC DEVELOPMENT
Form Tool 42.00
DECISION RESOURCES
Chartmaster 209.00
Signmaster 145.00
ENERTRONICS RESEARCH
Energraphics 2.0 329.00
GRAPHICS COMMUNICATIONS
Graphwriter Combo 329.00
Freelance 219.00
MICROGRAFX
PC Draw 159.00
In-A-Vision 199.00
Windows Draw 85.00
MICROSOFT
Chart 189.00
SPRINGBOARD
Newsroom 32.00
T-Maker
ClickArt Personal Publisher 129.00
UNISON WORLD
Printmaster 32.00
Art Gallery I & II 22.00 each
PROJECT MANAGEMENT
BREAKTHROUGH
Timeline 235.00
COMPUTER ASSOCIATES/I.U.S.
Superproject Plus 279.00
HARVARD SOFTWARE
Total Project Manager 279.00
SCITOR
Project Scheduler Network 339.00
ACCOUNTING
COMPUTER ASSOCIATES/I.U.S.
Each Accounting Module 309.00
Payroll 389.00
Easy Plus 89.00
OPEN SYSTEMS
GL/AR/AP/Payroll/Inventory 429.00
Purchase Order/Sales Order/Report Writer 379.00
Resource Manager 239.00
SBT
Accounting Software for dBase III
dLedger/dPayroll/dProject 275.00
dOrder/dInvoice/dPurchase 145.00
PERSONAL MANAGEMENT/ INVESTMENT
MECA
Managing Your Money 99.00
MONOGRAM
Dollars & Sense 99.00
COMMUNICATIONS/ TERMINAL EMULATION
HAYES
Smartcom II 95.00
MERIDIAN TECHNOLOGY
Carbon Copy 109.00
MICROSTUF
Crosstalk XVI 99.00
Remote 99.00
PERSOFT
Smarterm 220 149.00
SOFTKLONE
Mirror (Crosstalk Clone) 29.00
UTILITIES
BORLAND INTERNATIONAL
Superkey 40.00
Sidekick (Unprotected) 48.00
Travelling Sidekick 40.00

CENTRAL POINT
Copy II PC 29.00
Copy II Option Board 90.00
EXECUTIVE SYSTEMS
X-Tree 32.00
FIFTH GENERATION
Fastback 99.00
MICROSOFT
Windows 65.00
PERSONICS
Smart Notes 49.00
PETER NORTON
Norton Utilities 55.00
Norton Commander 37.00
QUAID SOFTWARE
Copywrite 39.00
Zerodisk 55.00
SOFTLOGIC SOLUTIONS
Disk Optimizer 37.00
Double Dos 37.00
Software Carousel 25.00
STERLING SOFTWARE
Intelligent Back-up 79.00
PROGRAMMING LANGUAGES
BORLAND INTERNATIONAL
Turbo Pascal W/8087 & BCD 59.00
Turbo Database Toolbox 40.00
Turbo Tutor 22.00
Turbo Graphix Toolbox 40.00
Turbo Jumbo Pack 139.00
LIFEBOAT ASSOCIATES
Lattice C Compiler 259.00
MICROSOFT
Macro Assembler 95.00
Fortran Compiler 219.00
Quick Basic 65.00
C Compiler 289.00

HARDWARE

MEMORY/MULTIFUNCTION BOARDS
A.S.T. RESEARCH
Six Pack Plus w/64k 170.00
Six Pack Premium w/512k 409.00
Rampage PC with 256k 275.00
Rampage AT with 512k 485.00
PARADISE SYSTEMS
Five Pack with 0 k 120.00
TALLTREE SYSTEMS
JRAM 3 PC with 0 k 195.00
JRAM 3 AT with 0 k 245.00
JLASER 270.00
GRAPHICS CARDS
HERCULES
Monochrome Plus 185.00
Color Card 159.00
PARADISE
Modular Graphics Card 219.00
EGA Auto Switch Card 359.00
SIGMA DESIGNS
Sigma 400 425.00
Sigma EGA 349.00
TECMAR
EGA Master 305.00
ZUCKERBOARD
Color Card (No paralled Port) 59.00
Color Card (Paralled Port) 79.00
Monochrome Graphics (Hercules Compatible) 79.00
I-O Mini w/clock calendar, parallel & serial port 75.00
MODEMS
HAYES
1200 399.00
1200B with Smartcom II 379.00

MIGENT
External Modem–1200 Baud 99.00
PRACTICAL PERIPHERALS
1200 Internal half-card 140.00
MONITORS
AMDEK
310 A 155.00
MAGNAVOX
Monochrome Monitor (Amber/Green) 90.00
Color (320X200) 279.00
NEC
NEC Multisync 575.00
PRINCETON
Max 12E 165.00
HX 12 469.00
SR 12 629.00
PRINTERS
C. ITOH DIGITAL GROUP Call for Prices
CANON
LBP-8A1 Laser Printer 2,285.00
CITIZEN
120D 199.00
Premiere 35 LQ 475.00
EPSON Call for Prices
NEC
Pinwriter P5 1,159.00
Pinwriter P6 529.00
OKIDATA Call for Prices
TOSHIBA
P321 580.00
P351 1205.00
CALL FOR ALL PRINTER ACCESSORIES
PLOTTERS/ PRESENTATION SYSTEMS
POLAROID
Polaroid Palette 1,499.00
SOFTWARE GARDEN
Dan Bricklin's Demo Program 60.00
HARD DISKS/ TAPE BACK-UPS
12 INTERFACE
10 MB External Tape Back-up 579.00
IRWIN MAGNETICS
10 MB Internal Tape Back-up 549.00
20 MB Internal AT Tape Back-up 859.00
MOUNTAIN
20 MB Hard Card 825.00
SEAGATE
20 MB Hard Disk with Controller 469.00
INPUT DEVICES
KEYTRONICS
KB 5151 175.00
MICROSOFT
Mouse with PC Paintbrush 129.00
MOUSE SYSTEMS
Mouse Systems Mouse with DR Halo II 99.00
SURGE PROTECTION/ BACK-UP POWER
COMPUTER ACCESSORIES
P15 Power Director 115.00
EPD
EPD Lemon 6 Outlet 32.00
IBC/TADIRAN
AT Replacement Battery 27.50
KENSINGTON
Masterpiece 89.00
Masterpiece Plus 115.00
RAM CHIPS/ CO-PROCESSORS
Intel, NEC, Toshiba, etc. Call for prices
COMPUTERS
PC/XT Compatible Computers
(FCC & UL Authorized)
Complete PC Systems from under **$850.00**
Complete XT Systems from under **$1,150.00**
Call for price quotation
We can build the system according to your needs

ADVANTAGES
- Orders placed before 3 p.m. (PST) shipped same day.
- We welcome corporate accounts.
- Free technical support.
- Immediate replacement of defective goods.
- Bulk discounts.
- One million dollar inventory.
- Immediate shipment on purchase orders from qualified institutions (schools and universities included).
- No hidden charges.

TERMS:
All prices subject to change without notice. We do not guarantee compatibility. No surcharge for VISA or MasterCard. 2% surcharge American Express. No returns without RA#. Short shipments must be notified within 48 hours. 15% restocking fee on non-defective goods: $3.00 C.O.D. charge. Shipping $4.00 per item, less on bulk orders. ($8.00 Blue Label.) (Higher for some hardware items.)

Order desk & technical support open:
8 a.m. to 6 p.m. Monday–Friday
10 a.m. to 2 p.m. Saturday (PST)
6934 Canby St. Suite #109-110
Reseda, CA 91335
Call for prices for any item not included in this price list.

1 818 705-1895 US 1 800 231-6603 CA 1 800 328 4473 US

Z-NIX

TECHNOLOGY EVERYONE CAN AFFORD!

AT-286 SYSTEM

$1,399

$1399.00 Minimum Qty: 5 Systems

- 80286 Processor
- 512K RAM on mother board
- Clock/Calendar with battery backup
- Color Graphics Printer Card or Monochrome Graphics Printer Card
- Floppy Disk Controller/Hard Disk Controller.
- 1.2MB Floppy Disk Drive
- AT Compatible Keyboard
- MS DOS 3.1 included

TURBO BAREBONE

$538

$538.00 Minimum Qty: 10+ Systems
$578.00 Minimum Qty: 5+ Systems

- Four-layer Turbo Board with 256K RAM on board.
- Four-layer Monochrome Graphics Card with Printer Port
- Four-layer Floppy Disk Controller Card
- One TEAC floppy drive
- 135 Watt Power Supply
- One year warranty (Storage Peripherals not included)
- MS DOS 3.1 included

• TTL Monochrome Monitor	$ 85.00
• TVM Multi-Display Color Monitor	$299.00
• Upgrade FDC for Multi-I/O Card	$ 50.00
• Expand RAM memory to 640K	$ 55.00
• 20 MB Hard Disk with Controller Card	$439.00
• TEAC Floppy Drive	$ 95.00
• EGA and high resolution RGB Color Monitor	$599.99
• Local Area Network Card	$239.00
• TEAC 1.2 MB Floppy Disk Drive	$119.00

- **Prices shown are wholesaler's prices.**
- **All orders add shipping and handling charge $3.00.**
- **Visa Master Card add 3% handling charge**
- **All return merchandise must have RMA number**
- **Prices are subject to change without notice.**

To Order Toll Free • Information

(1-800) 331-6083 • (818) 575-3700

Z-NIX COMPANY, INC.

9537 Telstar Avenue, #121, El Monte, CA 91731
Technical Support: (818) 575-3711 • FAX: (818) 575-3726

Computer Books

Top 10 Computer Book List—October 1986

The following list includes titles that have been popular with *Computer Shopper* readers during the past month. The list is compiled by Info-Source, a mail order book seller and is not strictly the list of numerical best sellers nationwide. However, every title on the list is a best seller. If the titles listed are not available in your local bookstore, they can order them for you, or you can get them directly from Info-Source, Box 21092, Midtown Station, New York, NY 10129; (201) 595-4505.

Understanding dBase III Plus
Alan Simpson
SYBEX
$19.95
Pages: 415
Copyright: 1986

dBase Commands and concepts are illustrated throughout the book with practical, business oriented examples—for mailing lists, accounts receivable and inventory design—PLUS scores of expert tips and techniques. *Understanding dBase III Plus* covers interfacing with Lotus, Visicalc, Wordstar and upgrading from dBase II. Simpson's other titles include: *Understanding dBase III, Advanced Techniques In dBase III and Simpson's dBase III Library.*

Running MS-DOS
Van Wolverton
Microsoft Press
$21.95
Pages: 500
Copyright: 1985

The second edition of this highly successful title is updated to cover MS-DOS through 3.1. This is truly the cornerstone book for any serious MS-DOS user's library. Quote PC Week "...written in that strange and wonderful tongue called English." Van Wolverton has worked at IBM and INTEL. A similar title is the *MS-DOS User's Guide* by Devoney from Que.

***Using 1-2-3* 2nd Ed**
(Includes release 2)
LeBlond
Que
$19.95
Pages: 540
Copyright: 1986

This new edition of the classic *Using 1-2-3* highlights changes well. 125 extra pages and a tear out chart are now included. This title must surely rank amongst the greats when it comes to GOOD books on 1-2-3. Other titles in this series include *1-2-3 Macros* and *1-2-3 Financial Macros.* If you're exposed to 1-2-3 you need this book!! Other titles include Osborne McGraw-Hill *Guide to Using 1-2-3* and *Command Performance: Lotus 1-2-3,* (Microsoft Press).

***Inside AutoCad* 2nd Ed**
Raker & Rice
New Riders
$27.95
Pages: 309
Copyright: 1986

Raker and Rice tell the inside story of how to use AutoCad and they give a "hands on" feel for the program. Contents include Setting up AutoCad, Getting Around, Graphics Primitives, Introduction to Editing, Drawing Enhancements and much more. An easy step-by-step introduction with over 300 drawings explaining the use of AutoCad and handy references for setting up the program for professional drafting and design work. New titles out are the *Illustrated AutoCad Book* and *Getting Started With AutoCad.*

***Amiga ROM Kernel Reference Manual:* Libraries and Devices**
Edited (CBM)
Addison-Wesley
$34.95
Pages: 544
Copyright: 1986

The long awaited and eagerly sought after ROM Kernal Manual contains a complete listing and description of the Amiga's built in read only memory (ROM) routines which support graphics, sound and animation. Assumes a basic knowledge of C and Assembly Language. Other titles in the series include *Amiga Hardware Reference Manual, Amiga Intuition Reference Manual* and *Amiga ROM Kernel Reference Manual: Exec.*

Programming In Prolog
2nd Ed
Clocksin & Mellish
Springer Verlag
$17.95
Pages: 279
Copyright: 1985

Newly revised and updated, this book examines Prolog as a practical programming language with examples and problems to demonstrate how to use Prolog effectively. Other titles include *Implementation Of Prolog* (John Wiley) and *Learning Micro Prolog: A Problem Solving Approach* (Addison Wesley).

Programmers At Work
Microsoft Press
$14.95
Pages: 327
Copyright: 1985

While each interview reveals an individual success story, taken as a whole, this is a fascinating collection that traces the history of the microcomputer industry, with many of those who helped shape this very revolution. Interviewed are Jonathan Sachs (1-2-3), Gary Kildall (CP/M), Ray Ozzie (Symphony), Andy Herzfeld (Mac Operating System) and others. This should make enthralling reading for any enthusiast. The book is peppered with "Quotable quotes"...Butler

continued on page 98

Book Review
The Hackers Handbook

by Hugo Cornwall
E. Arthur Brown
3404 Pawnee Drive
Alexandra, MN 5608
$12.95

In the early days of personal computing a Hacker was a dedicated devotee of programming technique. A person who searched out the innermost secrets of the computer was said to be hacking. The newspapers have distorted this meaning calling people who steal computer services and cause general trouble "Hackers." To the general public, this term has stuck and it has given "Hackers" a bad flavor.

This book has a little about both kinds of Hacker, but it is mostly about the kind of Hacker who gets into other people's computers or networks.

It was written in England and is a great success in the UK, now a US edition has been imported by E. Arthur Brown with US technical references.

If all this book was about was English Hackers, I would not waste your time with it, but it also contains information on many subjects hard to find elsewhere. Computer-to-computer communications, radio computer data and videotex are included as well as information on RS-232C and V.24. Brown has sold a lot of these books in the US and you might be interested enough in British hacking to buy it and read it. If you do you will also obtain a reference book on many communications subjects. ●

Book Review The Trapdoor

by Hal Glatzer
Published by Paperjacks
New York, NY
$3.50 ISBN: 0-7701-0438-X

This book is fiction, but the characters in it are all too real to me. The book is about the criminal side of hacking and looks at it from the inside. It tells the story of Joe, a loner who ekes out a living by petty electronic deductions from other peoples accounts until he gets involved in a big-time computer scam.

Hal Glatzer knows his characters and so do I. They used to hang out at my computer store in New York, although they were not yet into heavy hacking in those days, it was only because they were just learning how.

The Trapdoor is a fast moving story of what life in the digital underground is about. Read It.

Reviewed by Stan Veit ●

The IBM PC (And Compatibles) Free Software Catalog And Directory

Reviewed by Robert A. Froelich
Crown Publishers
225 Park Ave South
New York, NY 10003
$17.95 ISBN 0-517-56112-3

One of the great benefits of owning an IBM PC/XT/AT or clone is the huge library of software available for these machines. Even better is the fact that many thousands of programs are available in the public domain. Every type of program is included in the collections that make up the public domain software. Languages, communications software, business software, scientific and statistical software, games, word processors, spreadsheets and data bases can be found in the collections and in many cases the software is as good as those sold for hundreds of dollars.

The problem for most users has been where to find these programs and how to get the best of what is available. For those who belong to a user's group, one of the prime purposes of the group has been the establishment of a library of public domain software. It is a fact that even the largest library does not contain all the programs available.

The publication of this massive book has enabled the computer user to obtain the catalog numbers and description of software contained in tohe major libraries. These are:

* PC Blue Library
* Capital PC Library
* HAL-PC Library
* New York PC Library
* PC-SIG Library
* LICA PC Library

In all 625 disks containing over 12,000 disk files comprising some 110 megabytes of code are cataloged in this book.

It also contains information on scources of free software, helpful tips and techniques and a complete directory.

Everybody who has a PC should own this volume. The only substitute for it is the multi-volume catalogs issued by each library. This would cost many times the cost of this book and would not be as convenient.

Buy it and you will wonder how you ever got along without it. If you get just one public domain program instead of buying a commercial program you will more than save the price of this book. ●

Tech Note: In Praise Of The Ziploc Sandwich Bag

by Hal Nieburg

-Part #25600, 6.50" x 5.75" x 1.15 Mils, clear plastic, with snap seal, by Dow Chemical, indispensable to every computer user!

We hail the Ziploc Sandwich Bag, the best container for keeping 5.25" disks! Without it, how many precious disks would have bit the dust! For all those hapless computer owners and users who haven't learned about them, let this true life testimonial be a bearer of light.

There is nothing so functionally perfect and well-adapted to safeguarding disks as the nonpariel, modest but magnificent, Ziploc Sandwich Bag! It is exactly the right size. It has a sturdy and hermetically sealed plastic zipper, which may be opened and closed hundreds of times without appreciable wear. Talk about "user friendly," it resists childish hands just the right amount, yet, unlike those child-proof medicine bottles, adults can strip it open in a flash and pinch it back together just as swiftly.

Sealing it so simple. It requires only that we pinch the edges together at a corner with two fingers. Hearing that satisfying soft snap as the plastic bead slips into the slot, we slide our fingers along the seal, welding the two surfaces together in a powerful union.

This makes the floppy disk inside impervious to spilled coffee. In a scientific lab, a floppy was inserted in a Ziploc and placed in a pot of warm coffee for 24 hours. Then it was removed, still dry, and used to boot a computer, which it did flawlessly.

So protected, the disk is impervious to dirt and grime that might be picked up on the floor, impervious to most of the peradventures that befall those fragile receptacles of data and software. In the lab, a floppy inside a Ziploc was fastened to the bottom of a broom, and a basement storage area was swept. Removed from its container, the disk did a perfect directory.

Safe within sealed Ziplocs, disks have been known to survive even being stepped-on inadvertently or rolled over by the caster of a desk chair. In one stress test, a Ziploced floppy was tied to the ankle of a Boston Bruins' hockey player. It was a typically rough game. Boston lost to the Montreal Canadiens, 1-0, but the floppy was an undoubted winner, responding to a CHKDSK/F, after the game, with only one dangling cluster.

And so inexpensive! I have been buying 5.25" floppies at a low bulk price in large quantities. (I use them to distribute that this form of parsimony be reversed. You don't want your PC to smell like a Deli!)

Not that I want to start a ZUG (Ziploc Users' Group), but I thought it would serve the public interest to publish this tech note. Remember, Caveat Emptor! (i.e. make sure an empty one is handy at all times, especially when you go spelunking!)

Report
Ziploc Bags for Disk Storage
by Inspector #12

In response to your request for additional testing on the use of Ziploc bags for disk storage we wish to state that we have also tested other brands of zip bags including some that change color.

We could not duplicate the hockey player test without players so we did a break dancer test instead. The disk in the zip plastic bag was strapped to the leg of "Lord Splitskull" a break dancer well known in the more gymnastic school of this art. Unlike the results with more sendentary hockey player, the test subject was completely destroyed due to triangular stress and lateral compression.

We then tried the happy infant test wherein a plastic bag encased disk was given to a happy baby in place of a rattle. The child effected complete destruction of the disk in ten seconds. An un-cased disk took four seconds until destruction.

We then ran the bagged disks through the peanut butter and jelly tests. They passed with flying colors except for one which fell into the clutches of a small dog. Dogs do not cooperate in our tests.

The bagged disks also passed the lost-on-desk test and the leaky ball point pen test.

We think that the zip bags are great for external stuff-proofing but not for any bends or vertical stress. You still need one of those plastic boxes. ●

Who Says CP/M Is Dead?

by Ralph Nottingham
with Al Frazer

I have an Osborne 1, with two Nuevo double sided double density disk drives, Drive C (186k RAMdisk) and all the software I could want. With this system, I can do anything I want to do with a microcomputer. Yet I also have a PC compatible system. Why? Because I tutor microcomputers and most of my clients want to learn the new system.

I recently received a call from a friend at IBM who said that a man he knew had a SuperCalc disk from an Osborne that was unreadable. Might I be able to help? I said I'd try. The man arrived with the disk. He said it contained the complete liquidation inventory of a corporation with which he was involved. I prudently tried to make a backup copy of the disk and found that it wouldn't even copy. DUU to the rescue. Now DUU is one of the many fine programs contributed to the public domain by Ward Christenson. If microcomputing is a religion and CP/M is a denomination, I nominate Ward for canonization.

With DUU in drive A and the uncopyable disk in drive B, I asked DUU to show me its directory. Lockup. Bring up DUU in A again and the disk in B. Goto sector 200. Step backward with – ;a;. Fine until we get to track three. Nothing. The first three tracks on the disk containing the system and the directory have been wiped out.

Now the FORMAT command on the Osbornel shows the numbers of each track, and goes through them printing a * as it formats or an E if it cannot format a track. Pressing ESCAPE at any time, aborts the format. So time for desperate measures. I put the disk in B and told the Osborne to start formatting. I held my breath and when it said that it had formatted three, I pressed ESCAPE. I SYSGENed the disk and found that I could now copy it.

Using DUU and the copy, I found that I was able to locate the files and print them out for my client. He left, fairly happy with a hard copy of the inventory but asked me to see if I could recover the disk.

So now, I turned to my Guru, Al Frazer, and asked him if there was some way to write the sectors of the file to another disk. He suggested DU86, which I did not have, but which he gave me. With DU86, I was able to write the sectors of the file to a new file on the A drive, but when I tried to load them with SC, I got the message, "Not a SuperCalc file." After fumbling around some time I turned again to my friend Al. He asked me to give him a copy of the disk and let him see what he could do with it. I did.

Al called me the next day, to say that he had the files recovered. The trick was that SC uses six sectors for the header. By doing an ASCII search for the name of the company and moving back six sectors, the beginning of the header could be found. Then we move forward with the + ;A;/ command sequence until the end of the file. Then back to the beginning and Y for YANK with Y; + ;/ns. This moves ns sectors into memory. Then KFILENAME, writes the file to the A drive. There were a number of SC files on this disk and they could all be recovered with this procedure.

So CP/M is not dead. CP/M computers are alive and well and can do almost anything you might want to do on a micro.

The same sort of thing can be accomplished in MSDOS with DEBUG, but that is another matter. ●

Top 10 Books
continued from page 97

Lampson: "To hell with computer literacy. It's absolutely ridiculous. Study mathematics. Learn to think. Read. Write." Hmmmmmm!!

Commodore 128 Programmer's Reference Library
CBM
Bantam
$21.95
Pages: 745
Copyright: 1986

This reference guide by Commodore from Bantam, is for anyone using the new and powerful C-128. The 128 has many exciting features including CP/M, superior sound, graphics and sprite handling. The book covers many features of the machine and contents include: Basic Building Blocks, Basic 7.0, Programming the 80 column chip, CP/M on the 128, Memory maps, and 128 hardware specifications, just to mention a few chapters in this comb bound 745 page reference book. Other titles include *Computes! 128 Programmer's Guide, Your Commodore 128* (Osborne McGraw-Hill) and *128 Machine Language For Beginners (Compute!).*

MS-DOS Developers Guide
Angermeyer
SAMS
$24.95
Pages: 435
Copyright: 1986

For any serious programmer developing software for MS-DOS applications this title is packed with interesting tips and tricks. Contents include: Application development in assembler, structured programming techniques, real time programming, 8087/8088 coprocessing, recovery of lost data. A good title for the developer. Other titles include *Advanced MS-DOS,* (Microsoft Press), *Microsoft MS-DOS Reference Encyclopedia* (Microsoft Press).

Complete Turbo Pascal
Duntemann
Scott Foresman & Co.
$19.95
Pages: 540
Copyright: 1986

Written for programmers new to Pascal, this is an excellent guide to Borland's best selling Turbo Pascal Compiler. After a complete tutorial on the Pascal language, there follow detailed instructions on installing, modifying and using Turbo Pascal on both MS-DOS and CP/M based systems.

Contents include the following: Techniques for structured programming and program design, a guide to using Turbo Editor, Instructions on Turbo Pascal commands and overlays, explanations of the extended Turbo Pascal features not covered in the manual. This very readable, comprehensive guide includes dozens of examples—from the very elementary practice problems to large, complex programs. The author includes explanations of Turbo Pascal error messages as well as a detailed glossary. Other titles include *Advanced Turbo Pascal* (Osborne McGraw-Hill), *Turbo Pascal: A Problem Solving Approach* (Addison Wesley).

* * * * * * * * * * *

InfoSource is a full service mail order bookstore specializing in Computer and Technical books.

Should you wish to order any of the above titles, please send your payment, together with UPS shipping of $3.00 for the first title and .75¢ for each additional title. Most titles in print can be obtained by contacting: InfoSource, PO Box 21092, Midtown Station, New York, NY 10129. ●

HEATH/ZENITH

Expansion for Z-138, Z-148 Using Ampro 186 Little Board and KJT Expansion Chassis

Part II
by Peter Ruber

An Expansion Chassis for any computer system is basically an extension of the motherboard's bus in a separate case. A Transporter Card inside the main computer taps the signal lines of the bus, which are then buffered through a series of 74LSxxx chips. The reason for buffering the signals is to maintain the integrity of various signals that rely on critical circuit timing phases as they're transported over an extended length of ribbon cable.

On the Expansion Chassis end, a Receiver Card accepts the signals and unloads them to a motherboard that consists of several edge card expansion slots that are activated by a separate power supply.

There are a number of Expansion Chassis available with many different options. The first one that is obvious in most minds is the IBM Expansion Chassis which includes 8 additional slots for add-on cards, and a 10-MB hard disk with a controller card. Unfortunately, this cumbersome unit has an equally cumbersome price tag of about $2500.

I spent several months responding to ads in various computer publications to gain a better insight about what is available, but it was rather irksome to discover how disinterested some companies are in even sending out product literature.

A firm that seems to have an extensive variety of Expansion Chassis available is Emerald Systems. Theirs include assorted hard disk drives (some with 100-plus Megabtye capacity), streaming tape back-up units with removable cartridges, plus additional expansion slots. Their marketing director called me a few weeks after receiving my letter and promised to send me a catalog and price sheets. None, however, arrived. Conclusion: Emerald Systems really doesn't want your business.

Then there was a firm called PC Horizons who offered a small unit with an un-specified number of expansion slots (I suspect 5 based on the size of the unit) that sold for $549. All requests for information went unheeded, so draw the same conclusions as above.

A third unit was being marketed by Everest. This has space for, I believe, 7 additional cards and room for a couple of drives. Price—$759. Ditto.

I was beginning to become more than a little annoyed when I spotted an ad in *Computer Shopper* from a company called KJT Manufacturing, who offered a wide assortment of IBM compatible plug-in cards, power supplies, cases, disk duplicating systems and —an Expansion Chassis for only $295.

Much to my surprise, I received a call from KJT a few days later. They gave me a brief run-down on the features of their product and said they'd be sending spec sheets out that day. They also offered to provide me with an evaluation unit which arrived soon after.

I didn't know quite what to expect of a unit in this low price range and I was prepared to be lenient with my opinions —within reason, of course. But I was pleasantly surprised with the actual product. The case was the standard IBM grey, measuring 11 3/4" W x 6 1/8" H x 15 1/4" D. Four screws on the backplate secured the top cover. The metal is heavy-gauge inside and out, with a neat paint job that appears to resist scratches. The whole set-up—including the transporter/receiver cards was made in Taiwan, and I must admit that overall quality of the workmanship is excellent.

The KJT unit has 5 expansion slots, a 100-watt switching power supply that puts out a hefty 8 Amps at +5 Volts. The +12 Volts is rated at 5 Amps, and the −12 Volts at 0.3 Amps. The power supply is in a vented case of its own, with an exhaust fan to keep things cool. On the right, directly in front of the power supply, is a rack that will hold three assorted drives—floppies, hard disks or tape units.

Stocking The KJT Chassis

Now, since not everyone is inclined or inspired to perform internal modifications to their computer sytems, I decided to invert the Ampro 186 Little Board/Zenith Z-138 by installing some of the parts in the Expansion Chassis just to see how far I could carry my expansion schemes and still have all systems function harmoniously.

The only rewiring I had to do was to shorten the serial cable I described in the first part of this article. I undid my eariler modification of the Z-138 and plugged in the Z-130-1 expansion slot. I installed the transporter card and mounted the 2 34-pin ribbon cable sockets on the appropriate headers.

The receiver card plugged into the slot closest to the power supply inside the Expansion Chassis, which left me with 4 open slots to work with. The chassis also provides for a socket with a cable that terminates in a 5-pin DIN plug on the back in the event you plan to install a composite graphics card inside.

As luck would have it, I had just received a new hard disk subsystem to review in my Winchester column on the H/Z-89 computer for REMark, and it had a 20-MB Seagate ST225 hard disk drive that I borrowed briefly for my pro-

continued on page 100

The Zenith 151 PC & RGB Monitor Timing Problems

by Frank Roe

The popular literature is full of information praising the Zenith 151 for its high compatibility with the IBM PC. Compatibility, however, is a matter of degree and this article describes one of the few problems I have had with the Zenith PC. The problem manifests itself as a "tearing" of the screen image or complete loss of organization of the image when the computer uses a Princeton Graphics System (PGS) or Amdek 722 RGB color monitor. I am presenting a simple inexpensive solution to this problem which avoids any permanent modifications to the computer or monitor.

The Problem

Last year, enticed by the honey pot of excellent IBM software, I finally put my trusty old Apple II+ out to pasture and purchased a Zenith 151 PC. For the most part I have been extremely happy with my decision. Most programs for the IBM work as advertised on my 151 and a multifunction card and generic hard disk were added with no problem.

Recently, however, my faith was acutely shaken. The problem arose when I decided to upgrade my system by purchasing an RGB monitor for my 151. My excuse was that it was difficult to interpret all the fine differences in character shading on my word processor and spreadsheet which were really rich vibrant colors. It is a distinct possibility, however, that deep down inside I just wanted a new piece of chrome for my creation. In any case, I plunked down nearly $500 for a mail order Amdek 722 CGA/EGA dual mode RGB monitor. The Amdek determines whether you have the standard CGA video card (620 x 200 maximum pixel resolution) or the newer, more expensive EGA card (620 x 200 maximum pixel resolution) or the newer, more expensive EGA card (620 x 350 maximum pixel resolution). It then automatically alters its scan frequency to accommodate the board you have.

There is not a lot of software out there which takes advantage of the EGA nor is it obvious that I can just switch an EGA board for my Zenith 309A video card. A series of messages in the Compuserve Heath SIG (special interest group) indicate that you need something from Zenith called a ZCA-6 which disables the 309 (or 309A) video card and allows you to use another video board instead. I haven't verified this, but if you are thinking along these lines it would be prudent to check with Zenith first. In selecting the 722 I was merely leaving my options open for future hardware changes.

After a month of anticipation, the monitor finally arrived. When I finally connected it up, low and behold, the image was indecipherably smeared all over the screen. There wasn't just a little tearing at the corners, or a skewed image; the whole screen was just a mess of seemingly unrelated lines and dots. My surprise turned to anger at the thought that anyone would purposely sell me an obviously defective component. Anger and frustration faded, however, when I remembered hearing about this same problem occurring with a Princeton Graphic's RGB monitor. Maybe the charlatans hadn't sold me a bill-of-goods this time. A quick phone call to a

continued on page 213

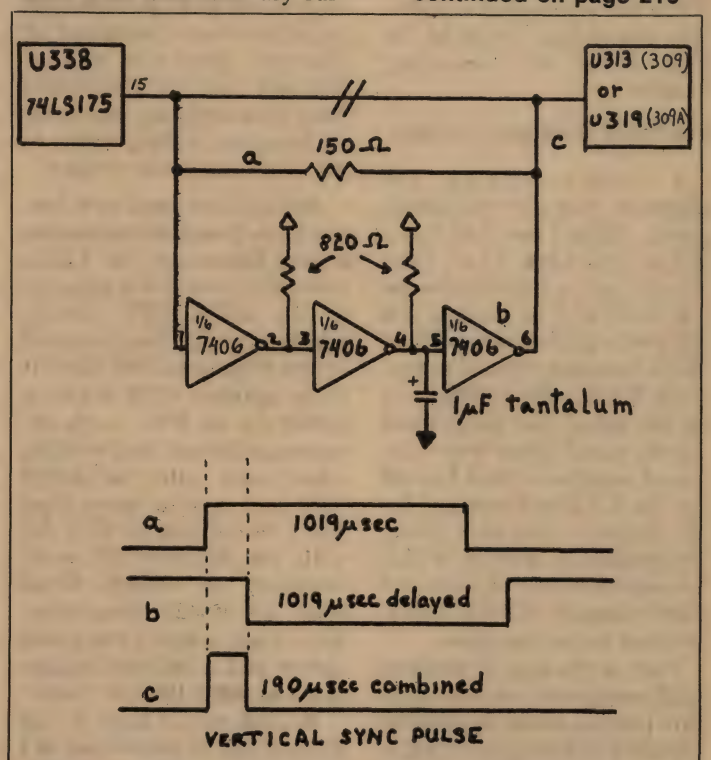


Figure 1 Schematic and timing diagram for sync modification board

Bridging the Gap: CP/M to C-64 Text File Transfer

by George M. Ewing

Recently I spent several weeks, on and off, typing up a number of chapters of text for a friend on my Heath H-89 CP/M system, so that she could have good letter quality copy to show a publisher for a project, rather than manually-typed rough draft. After the project was successfully completed and the copy all run off on a film ribbon daisywheel printer, she was pleased enough that she purchased a computer system with a letter quality printer. This was great, but she also wanted to get disk copies of the Heath CP/M files of the first book for her system, both for archival purposes and to make possible revisions and updates.

This was a straightforward enough request, but it was complicated by several factors: Her system was based around a Commodore C-64 with a 1541 disk drive, a ROM-based BASIC operating system, and a different file structure; my H-89 was running CP/M, and on an obscure disk format to boot, (H-17 10 sector, SSSD hard sector). We had machines with incompatible CPU's different operating systems, different file structures, even the physical disks were not the same. I knew practically nothing about the C-64, and while a faster typist than me, she was a novice to ANY personal computers. We had numerous short text files, totalling more than a hundred pages of copy. All of it had been entered using a screen editor originally created to run under HDOS, one that was completely different than anything that would run on a C-64 (or any other CP/M machine. for that matter). Even the CRT screen formats were incompatible; it looked like a real challange!

It seemed as if there were basically two ways to go: either have a user group or commercial service transfer the files from Heath CP/M to C-64 disk format, or put our two machines back to back, and transfer the files over a serial link with either a direct cable or with a modem. A distant third possibility, cassette file transfer, was rejected after a little study; although both the Heath H-88/89 and the C-64 did have cassette capability, the tape formats were also incompatible, and the 1200 baud Heath cassette format would be as slow as using a modem, in any case.

The next step was to dig for information by haunting Commodore dealers and user group meetings. We decided to work backwards, starting with the software my friend would need at the C-64 end to use the files when she finally got them, and then worry about the hardware and software needed to actually send the files across. This was a non-trivial problem. We had several C-64 word processing programs, some from public domain, some borrowed commercial ones, a couple actually typed in and debugged by hand from magazines and books. Most of the simpler ones assumed a user would not be editing text created under any other word processor, and stored the files in bizarre and encrypted form. What we needed was something that could handle a straight ASCII text file, and allow her to go in and edit files that had been pipped over from CP/M one way or the other.

After much experimenting and asking questions, we decided on Paperback Writer (TM) for a C-64 W/P program. It came highly recommended, even by dealers who didn't sell it, an encouraging sign. Futhermore, it was inexpensive, and we were able to try out a neighbor's copy and get the feel of the editor. Convinced that Paperback Writer could handle a reasonable length ASCII text file once we got it into the C-64, we ordered a (legal) commercial copy, and started looking at ways to make the file transfer.

After discarding the idea of a cassette transfer, the next approach to be ruled out was using a C-128. Sure, the C-128 could run CP/M, and it could also run C-64 programs, but not both at the same time. It was essentially two different

continued on page 214

Z-138 & 148
continued from page 99

ject. I secured the Seagate drive in the bottom of the case and mounted a DTC 5150BX IBM hard disk controller in one of the empty expansion slots.

Then I slid in a 40-track floppy drive, the Xebec "Owl" 10-MB hard disk drive and the Ampro 186 Little Board. I was short one power cable, so I used a power "Y" cable to give me 4 sources.

Since I wanted some additional flexibility, I decided to make my Ampro/Zenith connection through Serial Port B on the Ampro (connector J4), rewired it for DTE by switching the RxD and TxD pins, and used Serial Port A as the connection to a Heath H-19 terminal.

In order to ensure that I had a sufficient amount of floppy drive capability to back-up system files that would be stored on the hard disk drives, I daisy chained an 80-track drive from a separate drive cabinet to the Ampro floppy cable. This setup is certainly not mobile by any means, but I had the makings of a multi-user system that would be the envy of all my computing cronies.

The White Elephant Computer

I wasn't striving for elegance. Just raw computing power. What I now had was a Z-138 with 640K RAM, twin floppies and a 20-MB drive on one side, and an Ampro 186 high-tech Little Board with an H-19 terminal, twin floppies, 512K RAM and a 10-MB drive on the other. The Ampro and Zenith serial ports were also wired together so that I could use the Z-138 as a terminal for the Ampro, or use each system independently, and yet be able to transfer work files back and forth through SUPER DUO, without switching disks.

Part of the fun in working with computers over the years isn't just the ability to perform a variety of word processing or other chores with speed and accuracy; but being able to tear systems apart, mate co-processors, and have different systems work together. Barring occasional accidents and goofs, I have to admit having gained more genuine fun with this kind patch-'em-up tinkering than anything else.

Part of the reason for creating this project in the first place was to test out some of the flexibility of the Ampro 186 Little Board's ability to interface with the PC environment and to check out the SCSI interface in a networking situation.

The Final Obstacle

My wife, who decided to return to college three years ago is an expert in applying quarts of White Out Correction Fluid to her research papers. This has resulted in her having gummed up two perfectly good electric typewriters so that they no longer work and are shunned by the local repair centers.

I bought her a Commodore-64 system a while back but she hated not being able to work with an 80-column screen. But I suspect it had more to do with her ingrained suspicion of computers and all electronic gizmos in general. But now that her typewriters have gone belly-up, she readily became a willing victim in my latest computer project.

Among the several new Ampro Little Board enhancements is their Expansion/186. This is a daughter board that plugs into the 80186 CPU socket, which in turn is then mounted on the Expansion/186 card. It offers another 512K RAM, a socket for an 8087 math co-processor (which, incidentally, when used with the 80186 CPU will operate more than 400% faster than an IBM-AT with the 80286/80287 combination), an RS232C Serial Port, an RS422 Sync/Async Serial Port, a Real Time Clock option and a buffered expansion bus with 128 I/O lines.

As luck would have it, the Expansion/186 arrived just as I was outlining these project-articles. Having consumed all vertical space inside the KJT, I removed the 186 PC-DOS Little Board from on top of the Xebec "Owl" drive, extracted the 80186 CPU and plugged in-the Expansion/186 card.

I placed several strips of adhesive foam tape on the back of the 186 PC-DOS board and, using some plastic ties, secured the boards in an unused area adjacent to the expansion slot section in the KJT Expansion Chassis.

I prepared a 50-foot Serial cable that I plugged into the extra Serial Port on the Ampro Expansion/186 card, ran the cable out of my basement office to the upstairs room my wife used as her work center. I had a second H-19 terminal available that I wasn't using at the moment and I set it up in her office.

This is not a perfect solution as yet toward setting up a multi-user Ampro computer system because it will not allow me to access the 186 Little Board while my wife is using her terminal. Sometime in the next few weeks Ampro will be releasing a new SCSI networking board that will enable two terminals to access a single 186 Little Board. These boards can be daisy chained together so that a total of 12 terminals can be interfaced to these SCSI modules, all having access to a single hard disk drive and a single printer.

Those of you who are familiar with the SCSI interface limitations may not be aware of the fact that Ampro advocates an enhanced protocol called SCSI/PLUS. This makes uses some of the undefined signal lines on the 50-pin SCSI bus and, by means of a binary arbitration selection scheme, a total of 64 SCSI devices can be mated to the bus rather than the 8 now defined under the present ANSC X3T9.2 standard.

This is accomplished by means of a 16-pin header on each SCSI board which can be jumpered in different combinations to provide it with a numerical designation as a specific initiator device. Thus, when a particular SCSI computer module asserts its initiator role to gain access to the bus (such as a GET or SAVE command) issued to a disk drive device, or a PRINT command it will be able to communicate with that peripheral device, providing someone else doesn't have control of the bus at that moment.

If a specific device is using the printer connected to the bus, but your device wishes to access a hard disk drive, you will gain access because there is no device conflict. Usual contact between computer and drive is momentary, because of the rapid 1.5 meg/sec data transfer rate allowed on the SCSI bus. Delays are generally encounted if several computers try to access a single printer at the same time.

In order to keep the data traffic flowing smoothly to the printer and not tie up those computers or terminals waiting to dump their files, Ampro recently released a SCSI Printer Server board that can be expanded to 1-Megabyte of RAM. This Little Board will act as a printer-spooler device, accepting data from all computers on line, and police the printing chores on a first-come/first-served basis.

Sometime in the near future as I am able to secure these and other Little Boards, I shall integrate them into my system and report on how they work. Although some of the forthcoming Ampro boards are geared for the OEM market, they are equally usable in a home computing environment because of their low cost.

They may not be as graphics oriented yet as your IBM, the new Atari ST series or the Commodore Amiga, but for straight word processing, accounting, data base, communications, or other practical computing needs, the price effectiveness, speed and power of these boards cannot be equaled by anything on the market. They're especially useful in

continued on page 214

MISCELLANEOUS

Artificial Intelligence And The 80386 Microprocessor

by Sandra Mazolewski
Provided by Intel Corporation

Artificial intelligence is in the process of leaving the laboratory and entering the commercial marketplace. Sales of AI-based products are already significant, totalling more than $700 million in 1985. But that figure represents only a small fraction of the potential revenues. So far, the great majority of products have been AI development tools; rapid market growth will take place with the emergence of true end-user products.

Getting the AI market to lock into gear depends in large part on the availability of low-cost, general-purpose computing systems capable of supporting the specific burdens of AI processing. AI applications have in the past been tied primarily to special-purpose devices, carrying a high price tag and providing a limited range of functions. General-purpose microcomputers and workstations have until now lacked the computing power to support the rigorous demands of AI programs. But with the introduction of high-performance 32-bit microprocessors such as Intel Corp.'s 80386, that picture is changing. The merging of AI and mainstream computing environments is now at hand.

As a labor-saving device, the computer has served primarily to speed up the execution of tasks that are essentially simple. Given a set of well-defined, repetitive procedures—a long string of additions and multiplications, or a data base search—a computer performs millions of times faster than a human. But actual human faculties have proved harder for computers to emulate. These complex abilities—reasoning, planning, learning, sensing, and using language—constitute the realm of artificial intelligence.

AI methods differ fundamentally from conventional computing. While conventional computing consists primarily of numerical processing and arithmetical operations, AI programs manipulate symbols using *logical* operations. The essential unit of computation is the "symbol" (sometimes called an "object" in some programing models), which might represent a thing in the world, a group of things, a procedure, or a piece of interim data. The computer itself creates, defines, groups and destroys symbols in the process of deducing relationships and reaching conclusions about problems.

So for example, an AI program might infer that the symbol "dog" should be grouped in the symbolic category "mammals" because it possesses certain attributes such as fur and warm-bloodedness. This conclusion is possible through a process of logical inference and is arrived at through symbolic processing rather than the numerical approach of conventional computing.

The meaning of a particular symbol in an AI system—whether the symbol represents a thing or a procedure, for instance—is assigned by the AI system itself and can be modified as the problem-solving process unfolds. In conventional computing, a set of bits may represent something, such as a number or alphabetic character, but the interpretation is not under the control of the system. That a particular byte signifies a number to be added and not a letter to be deleted is rigidly predetermined by the procedural context; the programmer knows that at a given point in a program the computer is processing numbers, not words, and he instructs the computer to act accordingly.

One way symbolic processing is implemented is through the use of a "tag," a set of bits associated with each data word that specifies how the data are to be interpreted and treated at any given time. Tags distinguish numbers from letters and other types of data. New tags can be assigned by the system as needed. Normally used in developing AI systems, tags may be deleted upon completion of the application (more about that up ahead).

Conventional computation tends to proceed in a linear, predictable fashion. Programs dictate an orderly series of steps to be performed. AI is much more fluid, with the system finding its own path through a problem and tracing associative webs in unforeseen ways.

Similarly, traditional computation often takes a "brute force" approach to a problem, exhaustively weighing each alternative before arriving at a result or deciding a course of action. A data base program, for example, might search all 1,000 records in a file to locate a particular name. In complex, real-world situations, the number of possible choices is too great for even the fastest computer to consider. AI systems, like human beings, must attempt to find shortcuts to a solution, by looking for patterns and by following "heuristic" rules (rules of thumb).

Because of the inherent differences between conventional and symbolic computing, symbolic computing requires the use of specialized high-level programming languages quite unlike standard "number-crunching" languages like C and Fortran. Lisp (an acronym for list processing) is the predominant AI language in the United States. A variety of Lisp dialects are used, with the industry beginning to converge on *Common Lisp*. *Prolog* (short for "programming in logic") is similar in many ways to Lisp, and is also a popular AI language, especially in Europe and Japan. A third language, *Smalltalk*, has some adherents in the research community, but has yet to achieve significant commercial success.

Using AI languages to develop application programs calls for specialized programming tools, sold together as AI development environments. The components of a development environment include compilers, interpreters, linkers, loaders, and debuggers—all designed to support specific programming languages.

Compilers and interpreters are especially important. Compilers translate entire sections of programs from high-level to machine language before execution; interpreters translate high-level code a line at a time, translating and executing one line before translating the next. Interpretation is required by many AI programs, especially in the early development stages, because of their indeterminate, unpredictable nature. The computer does not know beforehand how to execute one line until it has performed the preceding instruction and inspected the current tag, for instance. Fully developed applications are often better-understood and can be treated more like conventional programs, dispensing with tags and using compilation in all or much of the program.

AI programs place heavy demands on the hardware that runs them. The programs and

continued on page 186

Fill The Hangar With New Flight Simulators

by Hal Nieburg

PC owners (IBM and compatibles) can now become minor world powers, with private air forces of their own, larger than that of, say, Monaco. Rambos and Walter Mittys alike will take delight not in a fantasy of destruction, but in the game challenges themselves which, as the programmers respond to the public appetite, seems never to fade or turn stale!

Microsoft's classic Cessna 182 upper-wing single engine craft is still the standard, but the skies are growing crowded with a half-dozen new and more advanced aircraft, like the F-15, the F-18, and many new 3-dimensional programs promised for the near future.

The classic Flight Simulator is now in its second version in full RGB color, offering additional airports and map locations, higher performance and responsiveness. Most recently there appeared a number of new locales and airports.

Simulators were such a natural for computers, many others have followed MicroSoft's example. Gato, by Spectrum HoloByte, is a realistic World War II Gato-class U.S. submarine taking on the Japanese navy and enemy shipping throughout the Pacific atolls and islands. And there was Battle Zone by AtariSoft, in which the operator drives an M-1 tank against countless enemies, human and extra terrestrial.

In the last year, more are now pouring forth from software-makers. All of them use either a joystick or the familiar Microsoft keyboard yoke (the numeric pad) for basic flight control and window-views; but the new packages diverge beyond that point, using a variety of well-thought-out keyboard commands. Most allow choice of skill-levels, so that landlubbers may learn progressively be easy and mistake-tolerant steps to fly these high-performance craft.

PC owners (IBM and compatibles) can now become minor world powers, with private air forces of their own, larger than that of, say, Monaco.

JET (the Navy's F-16 Fighting Falcon, and the AF's F18 Hornet) has been released by Sublogic, 713 Edgebrook Dr., Champaign, Ill., 61820. The package is easier to learn than Microsoft's Flight Simulator, but is not without challenge and brilliance. The planes may be flown from land bases or catapulted from the desk of an aircraft carrier. They have tremendous power and agility, with afterburn boosters, and can be flown from the cockpit or from the control tower. In the later mode, the experience is exactly like flying a radio-controlled model from the ground. One can watch in safety as the aircraft plunges into the ground. One can watch the action in this mode telescopically, switching the magnification from 2x to 8x power.

There is a free flight mode for aerobatics and precision maneuvering, and two different game modes for air-to-air dogfights (against MIG 21s and 23s). A variety of realistic modern weapons compose the armory, including M61 machine guns, Sidewinder and Sparrow missiles for air-to-air combat, Maverick and MK82 smart bombs for air-to-ground attack. With a touch of

continued on page 102

Fill The Hangar
continued from page 101

realism, overloading the armament reduces range and manueverability; so the pilot must decide on the optimum balance of weaponry for a particular mission.

Sublogic has incorporated a routine for patching-in backgrounds and map locations from Microsoft's program. This makes available 200 regions and airports for jet flight, takeoff and landing. You budding pilots can now fly a jet between the twin towers of New York's World Trade Center; or circle the Statue of Liberty. But beware, jet speeds are incomparably greater, and things attached to the ground sweep by very quickly indeed!

Recognizable ground features appear for several major population centers on the West Coast, including LA and Seattle; flights can be made also to many parts of the Chicago, New York, and Boston areas. Virtually all the airports in these five regions are available, although the Jet should take care to land only on jet-rated runways.

Here is a windshield/dashboard screen of Jet in flight. [Figure 1]

The program must be booted with a separate DOS disk. The Jet disk is copy-protected and full, so there is no room for system or batch files. Now replace with the Jet disk and enter command

A>jet

followed by a space and one of the following switches: H (for Hercules board), E (for EGA-IBM's enhanced graphics adaptor), M for monochrone. Now respond to menu prompts, indicating a choice of options: joystick, keyboard, PC Jr.; monitor types, etc. The key menu:

1. Dogfight
2. Target Flight
3. Free Flight
4. Demo Mode
5. Load Scenery Disk

Option 5 allows you to indicate map coordinates in order to select a location from Microsoft's Flight Simulator. Then the latter software is placed in the A drive and the flight resumes from whatever coordinates entered. The default is Chicago Meig's Field on the shores of Lake Michigan. Some other coordinates are:

	North	East
JFK, N.Y.:	17034	21065
Logan Int'l:	17899	21853
Seattle Int'l:	21343	6584
LA Int'l:	15374	5805

Begin flight by holding down grey + key on right of keyboard. This turns on engine and throttles it up. For takeoff, set throttle to 99 to ignite the afterburners. Once in the air, turn these off by hitting grey – key. For cruising, leave engine in range of 60 to 90. When extra power is needed to climb rapidly, turn on thrusters again.

One can readily learn the programs by practice, with minimum reference to the handbook. The main keys and their uses are as follows:

A- Azimuth, shows angle of manuever in relation to horizon. C- Control Tower, allows you to see plane in action from the ground. Magnify the image 1 to 8 times by pressing PgUp. PgDn returns to lower power magnification. Carriage Return-Select weapon system. P- Toggle switch to freeze or unfreeze action. R- Gunsight on screen. Spacebar- fire guns, drop bombs.

Choose weapon system by hitting <ENTER>. W- Turn on Radar screen. + Engine throttle up. - Engine throttle down.

Numeric Pad- The main joystick control yoke: 2- raise nose; 8- lower nose; 4- turn to left; 6- turn to right; 5- center controls.

ScrollLock- To look out cockpit windows. Provides following views when used in combination with following arrow/number keys: 8- Forward view; 2- Backward view; 4- Left view; 6- Right view; 5- View directly overhead of pilot.

F15 Strike Eagle

MicroProse Software, Hunt Valley, MD. (301-667-1151) has released a cluster of interesting simulations. The piece d'resistence is the F-15 Strike Eagle, a faithful working replica of the all-weather air-superiority/ground attack jet. Since air combat has so greatly increased in technological sophistication, the pilot has an impressive array of information displays and controls. Target and threat-tracking, navigational cues, and status messages are projected directly onto the windscreen.

Weapons status is shown in colored icons. There is a variable-resolution radar, combined with infrared emission detectors to pick up incoming missiles, allowing the pilot to manuever out of danger. A ground map and navigation cursor tell the pilot where he is and help him find targets or his own landing field/carrier. Here is the view from the cockpit, with these accessories switched on. [Figure 2]

Once you have mastered the basics of turning, climbing, diving, level flight, you are ready for a combat mission. You may select from among seven missions, each of which will confront the pilot with different battle challenges and weaponry. Each mission replicates an actual historical mission served by this aircraft. They are: the Libyan attack on a U.S. Navy task force in the Gulf of Sidra in 1981; The October, 1973 war between Egypt and Israel; The bombing of Haiphong Harbor, North Vietnam in 1972; you get the idea. Each simulates the actual facts of the situation facing the F-15s, and awards points on how well the pilot completes his mission and survives.

As each mission begins, you are at the controls at medium altitude and high cruise airspeed, spoiling for trouble. The pilot must plan his flight path, using the horizontal situation display to locate target, avoiding major SAM missile concentrations, or hitting these first before flying to other targets. Placing your navigation cursor on the first objective, the steering cue guides the craft, as you defend against heatseeking missiles, radar-guided missiles, and

continued on page 185

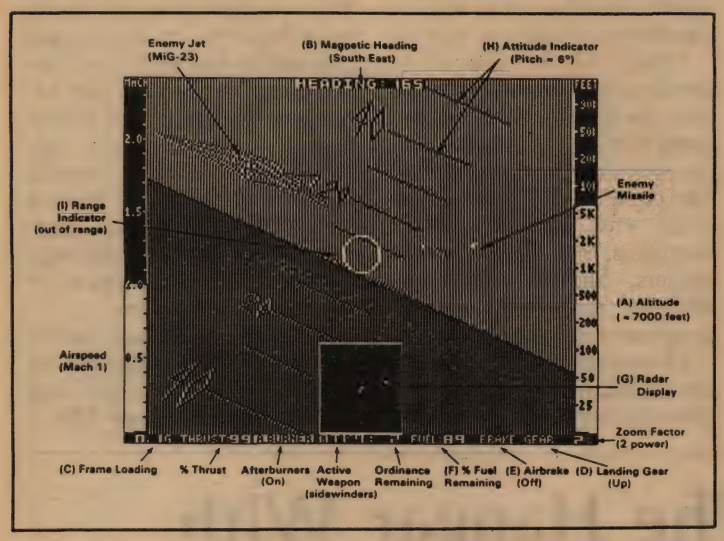


FIGURE 1

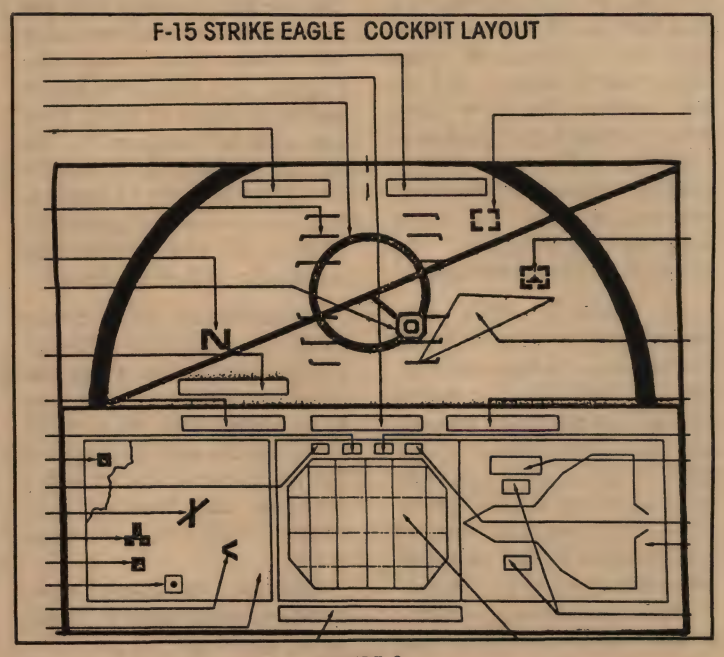


FIGURE 2

Borland International Introduces New Version of Turbo Tutor

Borland has developed a major upgrade of its Turbo Tutor program in direct response to the increasing use of the Pascal programming language in both educational instruction and professional software development.

Turbo Tutor is a comprehensive self-study guide to Turbo Pascal, the leading Pascal language development tool for IBM PC and compatible micros with DOS or CP/M operating environments.

Turbo Tutor Version 2.0 is comprised of a 400-page tutorial guide, and software on diskette, complete with 10,000 lines of fully-commented source code. Borland's software developers designed Turbo Tutor as an "interactive tutorial" that splits the computer screen into two windows. The end user can select and run an example in one window while scrolling through the example's source code in the second window. The Tutor can then present the end user with a multiple choice quiz and provide "hints" to help him or her arrive at a solution.

Turbo Tutor has three main sections, which offer a step-by-step introduction to beginning through advanced programming in Turbo Pascal.

Section I: Turbo Pascal for the Absolute Novice—getting started with Turbo Pascal, debunking popular myths about computers and programming, computer basics from the CPU to the software, a brief history of programming, and the first steps in use of Turbo Pascal.

Section II: A Programmer's Guide to Turbo Pascal—13 chapters on fundamentals of Pascal, from characters to files, complete with examples, exercises and review throughout; plus Turbo Typist and Animals, two example programs complete with source code.

Section III: Advanced Topics in Turbo Pascal—an overview of special topics for the practiced programmer that includes linked lists, trees, algorithms for search and sort operations, tips on using assembly language with Turbo Pascal, suggestions for writing large programs in Turbo Pascal.

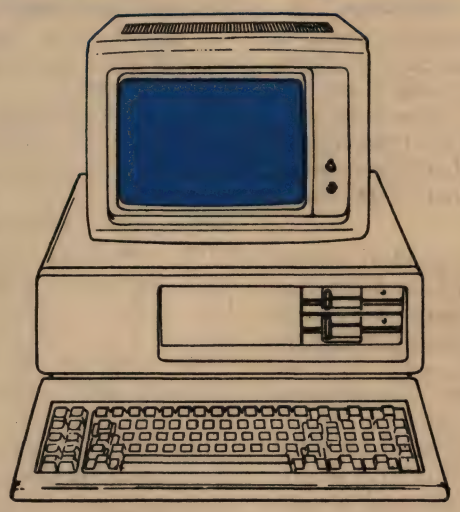
Turbo Tutor also contains special sections with guidelines for programming style; use of Turbo Pascal with other Borland software programs such as a SideKick, SuperKey and Turbo Lightning; answers to commonly—asked questions about programming in Pascal; syntax diagrams that illustrate the "grammar" of Pascal and a glossary.

The new Turbo Tutor is available immediately from Borland or through dealers and distributors of Borland products worldwide. For more information contact Borland International, Inc., 4585 Scotts Valley Drive, Scotts Valley, Calif. 95066, 408-438-8400. For orders or inquiries, call 800-255-8008; in California, call 800-742-1133.

Mention that you read about it in *Computer Shopper* ●

CALICOMP

HIGH QUALITY APPROVED COMPUTING MACHINES AT CLONE PRICES



CALICOMP BASIC COMPUTING SYSTEM
Perfect for Home or as a Network Terminal

DARE TO COMPARE—ONLY $795 *****DON'T FAINT—INCLUDES OPERATION MANUAL*****

- ****FCC APPROVED****
- 4.77 Megahertz
- 4 Layer Motherboard
- Up to 640k on Motherboard
- 135 Watt Power Supply
- 8 Slot Motherboard
- LEGAL Compatible BIOS
- 256k Ram Installed
- Includes Socket for 8087 Math Co-processor
- Monochrome Monitor and Video Card
- AT Type Keyboard
- Floppy Disk Controller
- 1 Double Sided Double Density DIRECT Drive—500k Unformatted 360k Formatted
- FREE MS-DOS
- FREE Word Processing Software
- FREE "Hot" Online Dictionary
- FREE Desktop Online Aid
- Complimentary Cleaning Kit
- 1 Year Limited Warranty

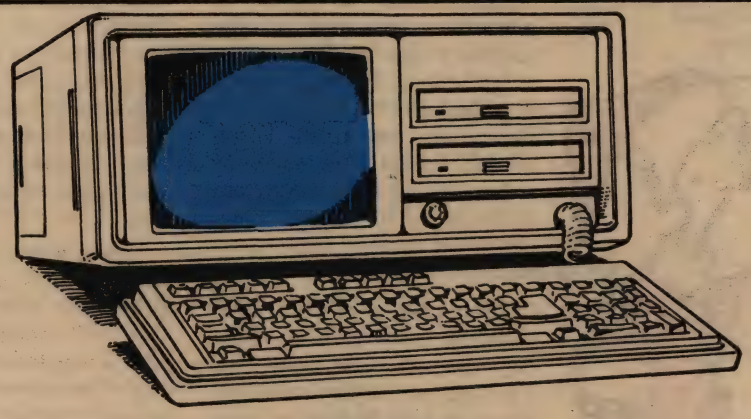
OPTIONS INCLUDE

- **STARTER SYSTEM**—Includes Case, Power Supply, AT Type Keyboard, 4.77 Mhz 4 Layer Motherboard, LEGAL BIOS 8087 Socket, 256k Ram, MS-DOS, Operation Manual & Complimentary Cleaning Kit
- **OFFICE SYSTEM**—Includes EVERYTHING in the BASIC COMPUTING SYSTEM ** PLUS** a TOTAL of 640k Ram, 1 Serial 1 Parallel & 1 Game Port, Clock Calendar & a TOTAL of 2 Floppy Drives.
- **PROFESSIONAL SYSTEM**—Includes EVERYTHING in the OFFICE SYSTEM ** PLUS** 1 20 Meg Hard Drive & controller

CALICOMP BASIC TRANSPORTABLE COMPUTER

WHY PAY MORE? ONLY $945

- 4.77 Megahertz—4 layer Motherboard
- 256k Ram Installed—Accepts up to 640k
- High Impact Case
- Internal Metal Cage
- 135 Watt Power Supply
- Attaching Keyboard
- LEGAL BIOS
- 8 Slot Motherboard—6 Usable Slots
- 8/4.77 Mhz Turbo OPTION—Add ONLY $50



AVAILABLE IN STANDARD AND TURBO

Perfect for Students and Salesmen

- Includes Socket for 8087
- Your choice of TTL or Composite NAME BRAND Monochrome Monitor Built in
- 1 Double Sided Double Density 500k Unformatted—360k Formatted DIRECT Drive with Floppy Controller Card
- FREE Word Processing Software
- FREE "Hot" Online Dictionary
- FREE Desktop Online Aid
- 1 Year Limited Warranty

OPTIONS INCLUDE

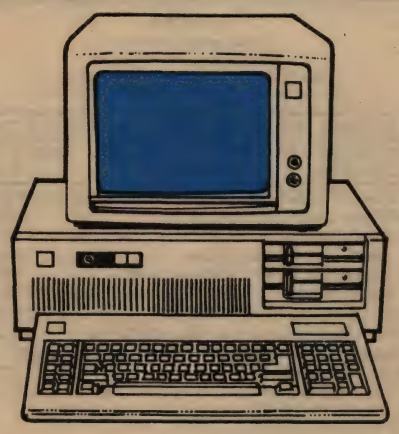
- **STARTER SYSTEM**—Includes Case, Power Supply, 8 Slot (6 Usable) 4.77 Megahertz Motherboard, Attaching Keyboard, LEGAL BIOS, 0k Ram, 8087 Socket and choice of TTL or Comp. Monitor Built In
- **BUSINESS SYSTEM**—Includes EVERYTHING in the BASIC TRANSPORTABLE SYSTEM ** PLUS** a TOTAL of 640k Ram, a TOTAL of 2 Floppy Drives, 1 Serial, 1 Parallel & 1 Game Port with Clock Calendar
- **PROFESSIONAL SYSTEM**—Includes EVERYTHING in the BUSINESS TRANSPORTABLE SYSTEM ** PLUS** 1 20 Meg Hard Drive With Controller

CALICOMP AT BASIC COMPUTING SYSTEM—For the Individual with Discriminating needs or The Business with growing needs.

WHERE ELSE CAN YOU FIND THIS QUALITY AT ONLY $1299?

- 8/6 Megahertz 80286 Motherboard with 8 Slots 5 Layer Motherboard—Speed switch selectable
- LEGAL BIOS
- 80287 Socket
- LITHIUM Battery Operated On Board Clock Battery INCLUDED
- Battery Operated Keep Alive Included for Configuration (4 AA Batteries NOT Included)
- 200 Watt Power Supply
- Up to 1024k on Motherboard 512k Included
- Floppy Disk Controller
- 1.2 Meg Floppy
- FREE Word Processing Software
- FREE "Hot" Online Dictionary
- FREE Desktop Online Aid
- 1 Year Limited Warranty

ASK ABOUT OUR MANY NON-LISTED OPTIONS AVAILABLE FOR OUR AT SYSTEMS



LARGE CORPORATE DISCOUNTS AVAILABLE

PRICES SUBJECT TO CHANGE

Slide Case AT w/Hardware & Electrical Kit—ASSEMBLED	$79.00
150 Watt XT Power Supply	$62.00
200 Watt AT Power Supply	$109.00
Monochrome Graphics Card w/Printer Herc Compatible	$67.50
RGB Color w/Printer—640x200 Resolution	$64.00
Enhanced Graphics Printer Adapter (EGA)	$245.00
Mono Text/Color Graphics—MAI Compatible	$195.00
Par, Ser, Game, Clock & FDC for 2 Drives	$71.00
Hard + Floppy Controller (2 + 2) XT	$129.00
Hard + Floppy Controller (2 + 2) AT	$210.00
5150 Type Keyboard XT	$51.00
5151 Type Keyboard XT	$75.00
AT Type Keyboard For XT	$69.00
Fuji 500k Unformatted 360kFormatted Direct Drive	$93.00
Teac 500k Unformatted 360k Formatted Direct Drive	$99.00
Teac 1.2 Meg Direct Drive	$145.00
Seagate ST238—30 Meg	CALL
SPECIAL	
Seagate ST225—20 Meg—with controller	$425.00

FOR ALL YOUR COMPUTER NEEDS CALL CALICOMP 213-301-0095

Something New continued from page 69

From what I observed ESTC is constantly fine-tuning this package to meet individual needs. There is no way that the system can remain a static package since it will continue to grow to match curriculum changes. Science is being worked on now for the elementary school levels and I understand that the secondary curriculum is underway. This represents a tremendous amount of work. If you have ever made up lesson plans you will understand the magnitude of this undertaking.

Lesson plans alone do not make a successful educational software package. First of all, these plans are drawn up by "Master Teachers" who are recognized for their success in the areas dealt with by the individual plans. The sequence that ESTC follows in developing the lessons interested me. The first step is to decide what skill is to be taught. Once this is accomplished the curriculum people decide which teacher is best qualified to write the lesson plan. When the plan is complete the curriculum group translates it into material that is compatible with the computer delivery capabilities. They also lay out the scenes to be presented. This layout follows a see/hear/respond sequence.

From the curriculum group the material is given to the commercial art department. Each scene is created. I saw no repeated items in the graphics and asked about the lack of repetition. The artists are not allowed to use the same drawing over and over again. Each dog is a new dog and so on. No boredom! When the artists are through the programmers take over to put the entire package in computer language.

When the package is complete it is run through the entire process again (and again if necessary) until each department is satisifed with the product. Then it is field tested to be sure it is appropriate for the desired result. Then and only then is it included in the classroom package.

The program presents lessons in such a way that there is no boredom or lack of interest. Each student works in privacy at his/her own speed. With the earphones in use there is no noise in the lab except for the clatter of keys and an occasional exclamation from a student. Concentration on the lesson is complete. Since the lessons are short, a total of 25 minutes per session allows up to two lessons, there is no lost interest due to short attention spans. The most vocal response is when the session is over and you hear groans of "Not yet!." This type of response is heard from the adults attending demonstrations of this network and they are doing elementary school work!

Record keeping is done by the Model 3000 host computer so that the teacher always knows where each student is in the progression of skills. This information is available in a number of different formats ranging from a report to parents to a summary for the teacher to use in planning his or her lessons. The host matches each student to the material needed and sets up the lesson for each session. This is all done automatically after the system is initialized in the lab. Each computer must be booted and then the host takes over.

How does it work? Fantastic! At the beginning of the day the system is activated. Throughout the day it will cycle each twenty-five minutes based on a schedule set up by the school. When the students enter the lab they will find their name in big letters across the screen of one of the computers as it waits for them to start the lesson. When they signify that they are ready the computer informs them of what they will be working on in the current session. The computer addresses the students by name frequently as the lesson progresses. Feedback is immediate in the classwork. A great deal of positive reinforcement is used throughout the material but it never seems to be repeated in the same way.

It was too good to be true and I decided, as I am sure many others must have also, to play dumb and flunk the 3rd grade math session and see what happens. The program "gently" let me know that I was missing the problems. I believe that it cut the session short as I continued to give wrong answers and then it indicated that a little more work was needed in this skill and branched off into a new lesson that developed the skills that I was "missing." The host backed down to the level where I was showing some success and then started to work back upwards in difficulty. There was a complete absence of frustration in the way it was done.

When a student finishes a lesson a new one is started unless the host decides that there isn't enough time to complete a new lesson. If that is the case it branches off to another area of short lessons that serve to reinforce the learning. Students work from the beginning of the session until the end. Time on task is complete. When the session is over "That's all for today" appears on the screen and the keyboard is locked out. The host uses five minutes to cycle for the next class so when they enter, they find the lab set up just as the previous class found it, ready for action. This eliminates most of the complaints that I have had with the use of networks in the school lab. Down load-time on the old Model III network could take most of the class time if you weren't careful in your planning. Using 640K machines minimizes work station time to access the host computer and keeps the inactive time of the student to a bare minimum. Most of the time any short delay is not noticed by the student at all.

OK, so it works without a hitch, so what? We aren't going to replace our teachers with computers. This system won't replace all teachers or even a single teacher. It does supplement and reinforce the teacher's work. It serves as an indicator as to where the student is located in the basic skills ladder and helps the teacher formulate his/her lesson plans so they meet the needs of the student. It provides twenty-five minutes a day of total individual attention per student. The lab, provides an additional educational experience(s) rather than replacing an existing classroom situation. ESTC states that "The ESTC System does not replace the current basic curriculum. Rather, ESTC's approach is to complement and enhance the school's on-going programs in reading and mathematics by providing a foundation for the essential topics and skills. In particular, critical thinking skills are continuously introduced and reinforced in both reading and mathematics. Developing positive student attitudes toward these basic subjects ranks high in the program."

Current lessons are supplemented by the ESTC package. Diagnosis of skills deficiencies is simplified by using the computer records. The use of the computer records for grading, to me, is useless unless it is for a separate subject such as "Computer Applications" or some such. At this level only a warm, living, breathing, laughing, crying teacher can decide what grades are to adorn the report card. At times the skills being presented will be ahead of the teacher's progress in lessons and at other times the teacher will have already taught the skills being

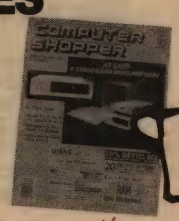
continued on page 105

SPECIAL LOW HOLIDAY RATES

GIVE *COMPUTER SHOPPER* For the HOLIDAYS—

1st Gift $18.00

Each additional Gift (or your own subscription) $14.97



Call our toll-free Holiday Hotline

1-800-327-9926

(In FL 1-305-269-3211)

Mon-Fri 8am-5pm E.S.T.

Prices valid in USA only. Canadian and foreign rates available upon request. X-503

NEW PRINTERS ADDED! FIND YOURS BELOW. Good This Month

RIBBON SALE — EXACT REPLACEMENTS

PRINTER MAKE, MODEL NUMBER Contact us if your printer is not listed. We have many more in stock. We can probably RELOAD your old cartridges.	RIBBON SIZE Inches by Yards	NEW CARTRIDGES From the various manufacturers or made in our own shop. Ready to use.			RELOADS You SEND your used CARTRIDGES to us. WE put OUR NEW INSERTS in them.			INSERTS EZ-LOADtm DROP IN, NO WINDING! EXACT REPLACEMENTS made in our own shop. Cartridges NOT included.		
C ITOH Prowriter 1550-8510, NEC 8023-8025, APPLE DMP-IMAGEW	1/2 x 18	$15/2	$42/6	$ 78/12	$7/1	$6 ea	2 or more	$15/3	$54/12	$288/72
C ITOH STARWRITER F-10-40 — Carbon Film Black	5/16 x 130	$18/3	$60/12	$342/72	$5 ea 3-11	$4 ea	12 or more	$24/6	$42/12	$234/72
DIABLO HYTYPE II — Fabric Black	NOT EZ LOAD 5/16 x 17	$18/2	$51/6	$ 96/12	$8/1	$7 ea	2 or more	$21/3	$78/12	$432/72
RADIO SHACK-TOSHIBA-COMMODORE-PANASONIC-RICOH	1/2 x 52	RS DMP-2200			$18/1	$16 ea	2 or more	$30/3	$57/6	$108/12
Carbon Film - DWP 210 (Hytype II) Black (1445)	5/16 x 145	$18/3	$60/12	$342/72	$5 ea 3-11	$4 ea	12 or more	$24/6	$42/12	$234/72
DW II, DWP 410-510, RICOH 1200-1300-1600 Black (1419)	1/4 x 145	$18/3	$60/12	$342/72	$5 ea 3-11	$4 ea	12 or more	$24/6	$42/12	$234/72
Red, Green, Blue, Brown Colors (1419)	1/4 x 130	$21/3	$72/12	$414/72	$6 ea 3-11	$5 ea	12 or more	$30/6	$54/12	$234/72
Fabric (Long Life), DWP 210 (Hytype II) Black (1458)	5/16 x 17	$18/2	$51/6	$ 96/12	$8/1	$7 ea	2 or more	$21/3	$78/12	$432/72
DW II, DWP 410-510, RICOH 1200-1300-1600 Black (1449)	NOT EZ LOAD 1/4 x 25	$18/2	$51/6	$ 96/12	$8/1	$7 ea	2 or more	$21/3	$78/12	$432/72
DMP-100, LP VII, COMMODORE 1525, GORILLA BANANA (1424)	Inker Loop	$18/2	$51/6	$ 96/12	.....			.....		
DMP-200, 120, (430 Inserts & Reloads Only) (1296) (1483)	1/2 x 20	$20/2	$57/6	$108/12	$7/1	$6 ea	2 or more	$15/3	$54/12	$288/72
DMP-400-420, LP VI-VIII, PANASONIC KXP-130-1093 (1418)	5/16 x 14	$15/2	$42/6	$ 78/12	$7/1	$6 ea	2 or more	$15/3	$54/12	$288/72
DMP-500 (130 Inserts & Reloads Only) (1236) (1482)	1/2 x 20	$22/2	$63/6	$120/12	$7/1	$6 ea	2 or more	$15/3	$54/12	$288/72
DMP-2100, TOSHIBA P1340-1350-1351-351 (1442)	1/2 x 20	$15/2	$42/6	$ 78/12	$7/1	$6 ea	2 or more	$15/3	$54/12	$288/72
LP-I-II-IV, CENTRONICS 730-737-739-779 (Zip Pack) (1413)	9/16 x 16	.....			.....			$12/3	$45/12	$252/72
LP III-V, CANON A1200 (New Only) (½ x 5) (1414)	1/2 x 15	$15/2	$42/6	$ 78/12	$7/1	$6 ea	2 or more	$15/3	$54/12	$288/72
EPSON LQ 1500, (LQ 800, LQ 1000 Inserts and Reloads Only)	1/2 x 14	$18/2	$51/6	$ 96/12	$7/1	$6 ea	2 or more	$15/3	$54/12	$288/72
MX-FX-RX 70-80-85, LX 80-90 (5/16 x 7), IBM PC (5152)	1/2 x 20	$14/2	$36/6	$ 66/12	$7/1	$6 ea	2 or more	$15/3	$54/12	$288/72
MX-FX-RX 100-185-286, IBM PROPRINTER (7/16 x 20) (4201)	1/2 x 30	$18/2	$51/6	$ 96/12	$8/1	$7 ea	2 or more	$18/3	$66/12	$360/72
DX 20-35 Carbon Film (Multistrike), OLIVETTI ET-121-221	5/16 x 290	$21/3	$72/12	$414/72	(Call for Correctable Prices)			.....		
NEC Spinwriter-Carbon Film - 2000-3500 (Reloads BCCOMPCO Only)	5/16 x 145	$18/3	$60/12	$342/72	$5 ea 3-11	$4 ea	12 or more	$24/6	$42/12	$234/72
- 5500-7700 (Can Reload Most Types)	NOT EZ LOAD 1/4 x 145	$18/3	$60/12	$342/72	$5 ea 3-11	$4 ea	12 or more	$24/6	$42/12	$234/72
-Fabric - 2000-3500 (Can Reload All)	1/2 x 14	$18/2	$51/6	$ 96/12	$8/1	$7 ea	2 or more	$15/3	$54/12	$288/72
- 5500-7700 (Can Reload All)	1/2 x 13	$15/2	$42/6	$ 78/12	$8/1	$7 ea	2 or more	$15/3	$54/12	$288/72
Pinwriter P1-P2-P6	1/2 x 20	$25/2	$69/6	$126/12	$7/1	$6 ea	2 or more	$15/3	$54/12	$288/72
P3-P7	1/2 x 27	$30/2	$84/6	$156/12	$8/1	$7 ea	2 or more	$18/3	$66/12	$360/72
OKIDATA Pacemark 2350-2410 Black	1/2 x 100	$25 each			$20/1	$18 ea	2 or more	$36/3	$132/12	$720/72
Microline 182-183-192-193	Inker Loop	$20/2	$57/6	$108/12						
ML-80-82-83-92-93 (Call for ML-84 Prices)	1/2 x 16	$21/6	$36/12	$198/72						
MANNESMAN-TALLY MT-160, RITEMAN INFORUNNER (Inker Loop)	9mm x 11	$19/2	$54/6	$102/12						
MT-180-290	9mm x 13	$20/2	$57/6	$108/12						
-SPIRIT 80 (SP80) COMMODORE 1526 (Multistrike)	1/2 x 35	$16/2	$45/6	$ 84/12						
PANASONIC KXP-1080-1090-1091-1092-1592-1595	Inker Loop	$20/2	$57/6	$108/12						
BROTHER HR-15-25-35 — Carbon Film (Multistrike)	5/16 x 82	$18/3	$60/12	$342/72						
COMREX DX-15, II — Fabric (Call for Comrex 420 Prices)	5/16 x 17	$15/2	$42/6	$ 78/12						

SEND CHECK, MONEY ORDER, OR C.O.D. TO:

VISA **BCCOMPCO** MasterCard

800 South 17 Box 246

Summersville, MO 65571 • (417) 932-4196

WE PAY UPS GROUND SHIPPING on PREPAID ORDERS.
PLEASE INCLUDE STREET ADDRESS for UPS DELIVERY
FOREIGN ADD 15% U.S. FUNDS.
MISSOURI RESIDENTS ADD 5% SALES TAX

Something New
continued from page 104

presented by the computer.

The ESTC software is the best I have seen yet. The scope and sequence is without fault. The asthetic qualities are beyond what I thought possible for this type of software. The constantly changing graphics eliminates the boredom brought on by the same scenes being presented over and over again. It is easy to replicate a design once it is done the first time and save time and money. ESTC has avoided this pitfall. The use of audio is a tremendous asset. When the student talks to the computer his/her voice is digitalized and stored for playback when needed. Use of the mouse to manipulate objects on the screen or to select answers provides the tacticle activities that help make learning more interesting. In one operation you have involvement of hearing, sight, speech and tactile response. Limiting the session to 25 minutes follows the old adage that most teachers are painfully aware of from their first days in service, "The brain can absorb only as much as the fanny can endure!"

How do you get a lab like this? Easy. Call Tandy's Educational rep for your area and stand back. This is a turnkey operation with a few surprises left to be seen. Tandy installs the lab as either a lease-purchase, or an outright purchase. ESTC maintains the lab's operation. The kicker is that the lease of the software includes a technician to operate the system. This eliminates the constant problem of learning new software and its operation by people that aren't computer operators by trade. It also eliminates hiring a teacher, or an aide to operate the lab. The cost? The equipment costs less than a school bus. The rest isn't nearly as bad as I first expected. Definitely within reach of most school districts, especially when a new school is being built and the lab can be included in the price of the school. Some areas are using portable classrooms for this type of lab.

I have been a severe critic of most educational software and networks. Too many of our students are being taught to use computers that they will never see again to carry out skills that are as antiquidated as the computers they are using. Many companies are pushing computers at bargain prices to schools that are not aware that their equipment is substandard by today's technology. After all, if you can't sell the computer on the open market you can afford to drop the price drastically and sell in bulk to the schools. After the sale, support of a "bargain" computer is going to be scarce, if at all! One district bought a "name brand" computer at $500 + per unit only to find out that in order to run the software needed they had to spend almost $1100 per unit to upgrade the "bargains."

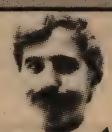
This equipment and software is designed to operate all day long. Since the student stations are MS-DOS based machines that can operate as stand alones, you also have 25-30 computers that can be used for other projects or classes besides the ESTC program. If you can turn 30 students every 30 minutes, 350 to 450 students a day can use the lab during the normal operations of the school.

When I finished the two hour demonstration of the ESTC system I thought that it would be a natural for remediation of skills required for graduation from high school. When I commented on this the reply was "yes it would be, but by the time the system has been in use for six years there should be no need for remediation." As far as it goes, that would be correct since the system provides constant remediation as the student works with the lessons. It will work well in situations dealing with students with learning disabilities.

I could go on for some time dealing with the educational specifics of the ESTC system. Educationally it is sound as a mountain. The theory behind the operation is excellent. If you want to go into depth about the reading or math curriculum I suggest that you call Tandy or ESTC (619-587-0087) for details since in this article I can not go into scope and sequence and learning theories. You will have a hard time finding fault with this offering from ESTC and Tandy! ●

Attention TANDY 1000 Owners

SAVE WITH CONFIDENCE – CALL MIDWEST MICRO
Dealers Call 800-528-4504



Dr. Dr. Zucker
It's another
ZUCKERBOARD

Just open the box and your ZUCKERBOARD is ready to use. All Zuckerboards are MADE IN THE U.S.A. But they cost less because they use custom large-scale integrated circuits. Every one has been designed by the good Doctor himself and is on the highest quality money can buy. And you get a TWO-YEAR Warranty. Just what the Doctor ordered!

TANDY 1000 RAM CARD

- Full Tandy 1000 compatibility
- Brings System to full 640K
- DMA Controller on board
- Low power consumption
- Optional Clock/Calendar with 20-year battery

With 512K RAM Just $149

With 256K Only $109 Add Clock/Calendar $39

MULTIFUNCTION CARD FOR TANDY 1000

- 512K RAM
- Parallel Port
- Clock/Calander
- Includes DMA Controller Chip
- Ramdisk/Print Spooler Software

Get full value and power from your Tandy 1000

JUST $249

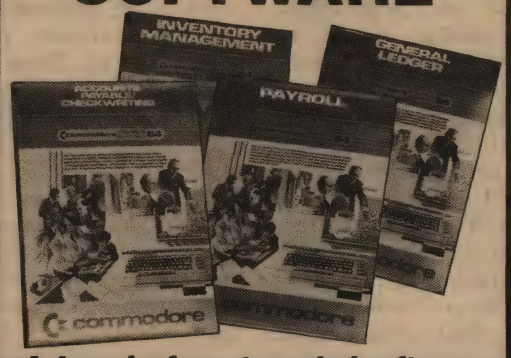
CALL TOLL FREE FOR INFORMATION OR ORDER
(800) 423-8215
HOTLINE: 513-663-4992

MONDAY-FRIDAY
9 AM - 6 PM (EST)
CLOSED SATURDAY
PRICES SUBJECT TO CHANGE
AVAILABILITY AND TYPE ERRORS

MidWest Micro-Peripherals
135 S. Springfield St., Saint Paris, Ohio 43072
HIGH TECHNOLOGY — NOT HIGH PRICES

COMB
Authorized Liquidator

Commodore 64 BUSINESS SOFTWARE



A 4-pack of most needed software for efficient business operations!

General Ledger
- Has 8 general ledger options.
- Provides 150 chart-of-accounts.
- 1500 general journal transactions.
- Maintains account balances for month, quarter and year.
- Custom income statements, trial balances, full reports and more.

Inventory Management
- Tracking of 1000 inventory items.
- Maintains perpetual inventory records.
- Calculates use, reorders, cost averaging, etc.

Payroll
- Provides 24 different payroll functions.
- Calculates payroll and tax deductions.
- Prints payroll checks.
- Interfaces with General Ledger software.

Accounts Payable/Checkwriting
- Combines tracking of vendor payables with an integrated checkwriting system.
- Maintains master file, provides invoice listings.
- Gives aging report by 30, 60, 90 days.
- Interfaces with General Ledger software.

90-Day Limited Factory Warranty.

Mfr. List: $199.80
ENTIRE SET of 4 Liquidation Price $39

Item H-1578-7025-059 Ship, handling: $4.00

NOTE: Also available by individual titles. Phone for prices.

Credit card customers can order by phone, 24 hours a day, 7 days a week. VISA MasterCard AMERICAN EXPRESS

Toll-Free: 1-800-328-0609

Sales outside the 48 contiguous states are subject to special conditions. Please call or write to inquire.

SEND TO: **Item H-1578**
C.O.M.B. Direct Marketing Corp.
1405 Xenium Lane No./Minneapolis, MN 55441-4494
Send ___ **Commodore Business Software Set(s)** Item H-1578-7025-059 at $39 each plus $4 each for ship, handling. (Minnesota residents add 6% sales tax. Sorry, no C.O.D.)

☐ My check or money order is enclosed. (No delays in processing orders paid by check.)

Charge: ☐ VISA® ☐ MasterCard® ☐ American Express®
Acct. No. _____ Exp. ___/___
PLEASE PRINT CLEARLY
Name _____
Address _____
City _____
State _____ ZIP _____
Phone (___) _____
Sign Here _____

COMB COMB COMB

Accounting Partner II
continued from page 71

manuals, primarily because of the technical detail it includes. It does point out the necessity for thorough planning before converting from a manual to a computerized accounting system. And, it includes a schedule of operations for each module, including the month end close out procedures. These operations should be carried out in the recommended sequence.

Accounting Partner II is a menu-driven system. The documentation has an illustration of each menu in sequence, with the text instructions clearly indicating the result of each choice. Accounting Partner II also queries you several times before any final action is taken. This is part of its error prevention system. As a result, when these questions are repeated in multiple sections of the documentation, there is a lot of repetition. The manuals follow each menu choice in detail as to the steps to be taken and the prompts which appear on the screen. Overall, this does add to the simplicity of the operation of Accounting Partner II.

While the explanations are clear and complete, they are not easy to find. There is no index, only a table of contents. So you have to thumb through a number of pages to find the material you want. Sometimes, in doing so, you may miss important information related to the help you are trying to find. There is no on-line help nor is there a tutorial for Accounting Partner II. If you run into real problems, you can obtain support via an 800 line or ask for help from your dealer (who also has an 800 number available, if he needs assistance). However, I found that the information is usually in the documentation, the only problem is finding it. And once the conversion from manual record keeping is complete, running the system is primarily a matter of following the on-screen menus and prompts.

Installation of each program module is menu-driven and quite simple. The operator need only respond to the on-screen prompts. Accounting Partner II will then open the necessary data files. For entry of data it is necessary that the operator have available the general ledger account numbers, and understand their use.

Once the system has been installed, it is very easy to operate. There is no doubt that an experienced operator would like to be able to by-pass some of the menus, but the system does not permit this. The strictly "by the menus" operation is an advantage when it comes to training a new operator. And, it is a fact of life in many businesses, that personnel turnover makes simplicity of operation an important consideration.

Every module of Accounting Partner II is very well error-trapped. You are given every opportunity to back out of an operation, if you decide that really wasn't what you wanted to do. Backing up from one menu to another requires only that you press the return key. Making a selection from a menu is a one-key process, just press the number of the selection. I have never been able to hang the program or get it to drop me back into the operating system. In most instances, it just ignores wrong keys. Pressing control C brings up a warning that exiting in this fashion may damage your data files. You are then allowed to return to the program. Attempting to print with your printer off-line brings up a message which allows you to check your printer and try again. In fact the only way you can get into trouble with Accounting Partner II is to try to do some of the operations out of sequence. For example, running a profit/loss statement without posting journal entires, or closing the accounting period without completing all posting operations. Accounting Partner II does tell you when there are unposted entries. You can ignore this warning and proceed, but you will end up with invalid figures. One business that I am aware of tried to use a weekly accounting period and then still close out on a monthly basis. This did create some very funny figures in their accounts. But I consider that this is more correctly termed operator error than program error. I am a firm believer, that with any software, you must read the instructions first!

In summary, Accounting Partner II is an easy to learn, easy to use accounting program. However, it's many shortcomings keep it out of the category of outstanding software. Compared to other accounting software, I can only rate it average. If its simplicity of use, excellent documentation, and excellent error trapping fill your needs, then I would recommend you consider this program. There is an interactive demo program available from Star Software Systems Dealers. I suggest you look this over if you are considering this program for business use. Otherwise, we'll keep looking for that "perfect" accounting package.

Accounting Partner II available from: Star Software Systems, 367 Van Ness Way, Torrance, CA 90501. (213) 533-1190. Price: $995.00. Runs on PC/MS-DOS and CP/M-86 computers. ●

Serial ◀▮▮▮▮▮▮▮▮▮▶ Parallel

NEW!

Printers! Plotters! Punches! Robots!

Convert What You Have To What You Want!

★ RS232 Serial ★ Centronics Parallel
★ 8 Baud Rates ★ Handshake Signals
★ Latched Outputs ★ Compact 3¼ × 4⅝ × 1½

No longer will your peripheral choices be limited by the type of port you have available! Our new High Performance 700 Series Converters provide the missing link. Based on the latest in CMOS technology, these units feature full baud rate selection to 19.2K, with handshake signals to maximize transfer efficiency. Detailed documentation allows simplified installation. Order the Model 770 (Ser/Par) or Model 775 (Par/Ser) Today!

only $89.95
Connector Option $10.00
CA Residents 6% tax
UPS Shipping $3.00

Tigertronics INCORPORATED
2734-C Johnson Drive
Post Office Box 3717
Ventura, California 93003

Buffer Products Coming Soon!

CALL (805) 658-7466 or 658-7467 For *FAST* Delivery VISA

If You're Serious About Buying A Printer

We offer you the following Plug 'n' Play printer packages which includes: (A complete package. You need nothing else.)
(1) A printer of your choice,
(2) The best interface with cable of our selection, and
(3) A package of 200 laser perforated 20# paper.
We guarantee it works beautifully the first time your plug it in and thereafter. No guesswork, no fuss. We also customize printer packages to suit your needs. Please give your computer model in the order.

Computer	Interface	CITIZEN 120D	Panasonic KX-P1091	Star NX-10 (New)
Apple II+, IIe, IIc Atari 400, 800 Commodore 64, 128 IBM PCjr. Timex 2068 TI99/4A	Apricorn graphic Xetec Graphix Xetec 8K SGX S-P converter Aerco CP Axiom TI	$265	$319	$329
Amiga, Atari 520/1040, AT&T Compaq, IBM PC, Columbia, Kaypro, Osborne, Tandy, Sanyo	Cable	$215	$269	$279
Print speed (cps): draft, NLQ		120,25	120,22	120,30
Printer buffer, warranty (month)		4K,12	1K, 24	5K,12

Inventory SPECIALS

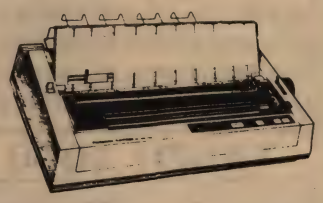
Canon PW-200 S
same as PW-1080A
- EPSON Compatible
- 160 CPS
- NLQ (23x18) 27CPS
- Push Tractor Feed

Sale: $249

Okidata Microline 93 $349
Manufacturer's clearance sale. Save $400 on this 15" printer. Friction and tractor feed. Draft/NLQ: 160/40 CPS. Brand new with full Okidata warranty. Available in 2 models: standard parallel and IBM. Please specify.

Panasonic.

2-year warranty on all printers



KX-P1592 $445
- Draft/NLQ: 180/38 CPS
- 9 Switch selectable print modes
- Print Buffer: 7K
- Friction and push tractor feed
- IBM graphics and Epson compatible
- 15" carriage

Suggested retail: $699

KX-P1092 $325
- Draft/NLQ: 180/33 CPS
- NLQ in Italic, Bold, Double width, Elite
- Print Buffer: 7K
- Friction and push tractor feed
- IBM Graphics and Epson compatible
- 5 Switch selectable print modes

Suggested retail: $599

KX-P1595 $619
- Draft/NLQ: 240/51 CPS
- Print Buffer: 8K
- Friction and push tractor feed
- IBM graphics and Epson compatible
- 15" carriage

Suggested retail: $949

KX—P1080 $205
- Draft/NLQ: 100/20 CPS
- Print Buffer: 1K
- Friction and adjustable tractor feed
- Graphics capability
- Ribbon cartridge with re-inking mechanism

Suggested retail: $319

APPLE ORCHARD

Checkmate Technology
"State of the Art Technology. 5-year warranty.

- **MultiRam RGB** for IIe, 80 column. New with RGB video output, built-in 65C816 CPU port, built-in port allows up to 2 Meg of battery-powered RAM to retain files and program in memory for up to 10 years. Free AppleWorks expander and utility program.
  64K.....$159 256K.....$189
  512K.....$229 1 Meg....$299
- **MultiRam CX** for IIc
  Free AppleWorks expander and utility program. Built-in port for 65C816 for 16 bits program.
  256K.....$165 512K.....$199
- **Zee-80A** for II+, IIe $75
  4MHz. No CP/M system disk is included.

Æ APPLIED ENGINEERING

- **RamWorks II** for IIe, 80 column
  Free AppleWorks expander and utility program.
  64K.....$139 256K.....$179
  512K.....$219 1 Meg....$289
- **RamFactor** for II, II+, IIe, laser 128 and Franklin. Free AppleWorks expander.
  256K.....$199 512K.....$239
  1 Meg....$309 2-16 Meg..Call
- **TransWarp** accelerator $219
- **TimeMaster II HO** $99
- **ViewMaster** 80 for II, II+ $109
- **Z-80+** CP/M for II+/IIe $109
- **Z-80C** CP/M for IIc $125
- **Z-Ram II** for IIc with CP/M disk, AppleWorks expander and RamDrive disk. New.
  256K.....$259 512K.....$299
  1 Meg....$459

PRINTER PACKS

Okimate 20 Color Pak $195
- Draft/LQ: 80/40 CPS
- Print buffer: 8K
- 24 print head thermal transfer
- Complete with Plug 'n' Print interface module, cable, software, paper, and two ribbons.

For Amiga, Apple IIc/IIe, Atari ST, IBM PC and PCjr. Optional graphics card for IIe..$69

Seikosha SP1000 Pak
- Draft/NLQ: 100/20 CPS
- Print buffer: 1.5K
- Tractor and friction feed
- With optional printer cable ($ 22 value).

For Commodore 64/128 $199
For Apple IIc, IBM and compatible, For Amiga and Atari 520ST > $219
For Apple II+/IIe with card $269
Specify your computer model.

Epson HomeWriter Pak $279
- Draft/NLQ: 100/16 CPS
- Print buffer: 1K
- With optional tractor and interface cartridge with cable for Apple IIc or IBM PCjr.

CITIZEN

MSP-10/15 $309/$419
- Draft/NLQ: 160/40 CPS
- Print Buffer: 1K expandable to 8K
- Friction and push feed tractor
- 18 month warranty

MSP-20/25 $359/$519
- Draft/NLQ: 200/50 CPS
- Print Buffer: 8K
- Friction and push feed tractor
- 10"/15" wide carriage
- 18 month warranty

Premiere 35 $509
- Daisywheel: 35 CPS
- Diablo compatible: printwheel, ribbon and commands
- Print Buffer: 8K
- Friction and push feed tractor
- 17" wide carriage
- 12 month warranty

ENHANCEMENTS

- **NLQ** for Epson MX, FX, JX, RX $65
  A Dresselhaus product to enhance your Epson printer to NLQ and SeleType features at the touch of a button. Easy to follow installation instruction is included. Give your model.
- **Epson FX Upgrade $105**
  An Epson product to enhance your FX-80, 80+, 100, 100+ to FX-85/185: NLQ Printing, 8K print buffer and SelecType features. Available in 4 different kits. Give your printer model.
- **StyleWriter** 64K buffer $169
  64K buffer (expandable to 128K) and letter quality printing for Epson MX, FX, Okidata and compatible. A dual function box: straight printer buffer and/or letter quality printing. You pay one low price for this double utilities.
- **MicroBuffer Mini $85**
  Printer buffer expandable to 128K. Parellel to parellel with cable. 5-year warranty.
- **Printer Switch $65**
  2 printers/1 computer or 1 printer/2 computers. Parallel to parallel with cable.

DISK DRIVES

- **Mitac AD-3C** ½ height $115

For II+, IIe or IIc. Quiet, 6ms access time, a direct plug-in unit. 6-month warranty.

ALPHA SCIENTIFIC
P.O. Box 626, Chesterfield, MO 63017
Telephone: (314) 532-5282

Prices and availability are subject to change without notice. ALL products are brand new with manufacturer's warranty. Replacement of defective items: within 15 days of purchase. All sales are final. Master/Visa add 3%. MO residents add 5.725% tax. Personal check takes 2 to 3 weeks to clear. We check for stolen credit cards. We are open (Central): Weekdays 10 a.m.-6 p.m. Saturdays 10 a.m.-3 p.m.

Shipping charges: (COD adds $2)		Printer	Others
U.S. continent:	UPS ground	$6	$2
APO/FPO:	Postal ground	$15	$4
	Postal priority	$24	$7

We do not accept COD or credit charges to APO/FPO.

dFlow—A dBase Utility Program

by Andrew M. Fried

The Twilight Zone

It's your first day on the job. The job interview went well, although you wondered why they had emphasized dBase so much during your interview. No matter, you got the job and you have the background to solve any problem in any language.

You are led to a small office containing a few bookshelves, a desk and a fully loaded IBM AT. On the floor by the desk is a huge stack of computer paper.

Before you have a chance to look at the directory on the AT, your boss comes into the room and welcomes you aboard the team. His eyes fall sullen as he tells an all too familiar story.

Less than a year ago, another programmer sat in the chair you are now in. He was working, relatively unsupervised, on a large dBase application program for the accounting department. For whatever reason, he left the company leaving behind 1000 plus pages of totally undocumented dBase code.

In unison, your eyes turn to that large bundle of paper on the floor. You gulp. Your boss stands up and tells you that they have confidence that you will be able to salvage the project in no time at all and wishes you the best of luck.

You look at the code and see that its all straight line, no comments, no indentation for loop control, variables all over the place and buggy. You wonder how you are going to make sense out of all of the mess.

Automated Recovery

While situations like the one mentioned above do actually occur, it is not uncommon to find programmers writing short useful utility programs to perform a myriad of jobs encountered during the programming and documentation stages of software development.

dFLOW, the dBase utility program created by WallSoft is a prime example. Originally developed in-house by professional dBase programmers, dFLOW enables a programmer to develope voluminous amounts of system level documentation effortlessly. In addition to this, dFLOW will reformat the program code in several different formats and will even provide error analysis concerning missing parameters.

The single most prominent feature of dFLOW is its ability to provide visual flow charts which graphically depict which program modules call other programs elements. When faced with documenting and understanding the 1000 page program described above, dFLOW would certainly save hundreds of hours of a programmers time to decipher and document the programs.

dFLOW actually consists of six individual modules, each of which performs a different function. For matters of

continued on page 118

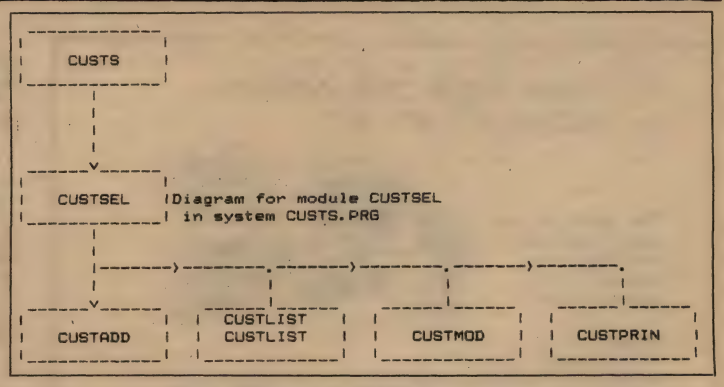


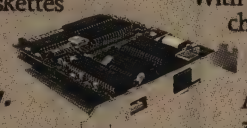
Figure 1 Example of dFLOW cross reference.

The BIGGEST reason to buy the FASTCOMM™ 2496 is that it adds Top Speed for Bottom Dollar.

psst... **Here are 8 more.**

The FASTCOMM 2496 is designed for PC to PC, mini and mainframe users who need all popular baud rates—9600—as well as 2400, 1200 and 300. ***You can do more than ever before with your modem and you can do it now!***

#1 ...more modem for your money.
The FASTCOMM 2496 includes 300-2400 baud for interactive work and play. When it comes to high-speed downloading—switch to 9600 baud with a simple AT command. You can transfer full diskettes of data in less than 10 minutes! Say goodbye to excessive long distance charges!


The FASTCOMM 2496B Half Card.

#2 ...with error-free reliability.
What's more, at high data rates, the modem's built-in error detection-correction protocol ensures error-free transmission when phone lines get too "noisy." Constantly monitoring the line, FASTCOMM 2496 quickly bounces you back to top speed when the lines clear. Your data remains intact and error-free! You get optimum performance without the worry!

#3 ...you can choose the flexibility of an internal modem.
The FASTCOMM 2496B may be the version for you! Ideal for PC applications, this half card inserts into any full or short expansion slot in your IBM PC, XT, AT or compatible, leaving you more room for other expansion uses.

#4 ...or choose the portability of an external modem.
Our external version—the compact FASTCOMM 2496—is a superb choice for PC terminal to mainframe applications. Its LED status indicators and speaker control make for easy monitoring during operation.

#5 ...or choose only the speed you need, now.
Start with either our FASTCOMM 9600 or 2400, at even lower prices. Later, snap in additional speeds by purchasing our FASTSNAP boards, available for both the external or half card modem.

#6 ...customize your modem to suit your needs.
With FASTCOMM's non-volatile memory, make changes that stay. Set defaults today, even on your remote modem using the ATY Command, and you'll have them tomorrow! And whenever you autodial, FASTCOMM automatically sets the speed of the receiving modem to match your baud rate!

#7 ...supported by popular communications software.
The FASTCOMM 2496 runs with virtually any asynchronous communications software that can support 9600 baud, including *Crosstalk XVI, Carbon* Copy, *Respond, Relay Gold, Q Modem, Blast and SimPC 3278.*

#8 ...and you get top to bottom service.
Call our toll-free number and your modem will be on its way within 24 hours! If you're not totally convinced the FASTCOMM 2496 sets a new high in speed, flexibility, and savings, return it within 30 days for a full refund.

COMPARE THE ADVANTAGES FOR YOURSELF

Manufacturer	300, 1200, 2400	9600	2496
FASTCOMM	**$619**	**$899**	**$999**
HAYES	$795	NA	NA
NOVATION	$795	NA	NA
RACAL VADIC	$695	NA	NA
VENTEL	$695	NA	NA

And there's more—dial up our FASTCOMM Bulletin Board for user tips, or our customer service representatives for support. And, if you should ever need it, the FASTCOMM comes with a two-year warranty.

Call 800-521-2496, ext. 16 (in Virginia (703) 620-3900) today!

Fastcomm Data Corp. is an Electronic Vaults, Inc. company.
All product names are trademarks of their manufacturers.

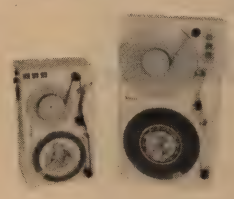
9-Track Tape Subsystem
for the IBM PC/XT/AT

The solution to your micro/mainframe communications problem is available today!

Qualstar's new ½ inch 9-track MINISTREAMER™ brings full ANSI data interchange capability to the PC. Now you can exchange data files with virtually any other computer using 9-track tape.

Available in both 7" and 10 ½" versions, the MINISTREAMER uses less desk space than an ordinary sheet of paper, yet provides full 1600/3200 BPI capability at an affordable price. Up to 134 megabytes of data (depending on format) can be stored on a standard 10 ½" reel of tape, thus making the MINISTREAMER a highly-reliable answer to your backup requirements as well.

Tape subsystem includes tape drive, full-slot coupler card, cables and MS-DOS or XENIX compatible software.



Discover the many advantages 9-track tape has over other Micro/Mainframe links.

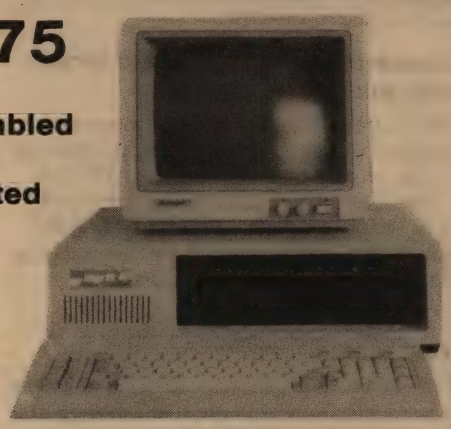
Call us today!

QUALSTAR®

9015 Eton Avenue,
Canoga Park, CA 91304
Telephone: (818) 882-5822

$475

Assembled & Tested



FULLY IBM® PC-XT COMPATIBLE

- ★ 640K Motherboard (256K Installed)
- ★ Eight Expansion Slots
- ★ 135W Heavy Duty Power Supply
- ★ ½ Height DS/DD 260K Drive & Controller
- ★ Keyboard ★ Metal Fliptop Case
- ★ Free Software ★ Six Outlet Surge Protector

ALL FOR ONLY — $475

or add these **Options** for a **Custom System**

Turbo Board 4.77 or 8 MHz Operation	$ 40
Full 640K on Motherboard	$ 60
Color Graphics Card (640x200)	$ 70
Mono Graphics Card & Print Port (720x348)	$ 90
Second ½ Height Drive (360K DS/DD)	$ 80
Serial, Parallel, Game Ports & Clock/Calendar	$ 60
20 Megabyte Hard Drive & Controller	$450
Monitors from	$ 95

Shipping & Handling Add 3%, VISA/MC Add 4%

All Systems Completely Assembled & Tested
90 Day Warranty 30-Day Money Back Guarantee
SATISFACTION GUARANTEED

ORDER NOW 1-800-253-4001

For Technical Info or OK Residents: 405-243-1559

or send Check or Money Order to:
Innovative Technology, Ltd.
P.O. Box 726, Elk City, OK 73648

Tornado continued from page 72

disk. (I could just as well have created the latter note, however, and TN would have performed no differently.) Thus, there is an elemental database feature. Any of you MSDOS users who are present or former TRS-80 owners might recall a product called Log and a successor called SuperLog. Tornado Notes reminds me of that product, except that TN is friendlier, easier to use, memory resident, and has better features, including true wordwrap: If your word can't fit on the present line, it is moved down to the next line.

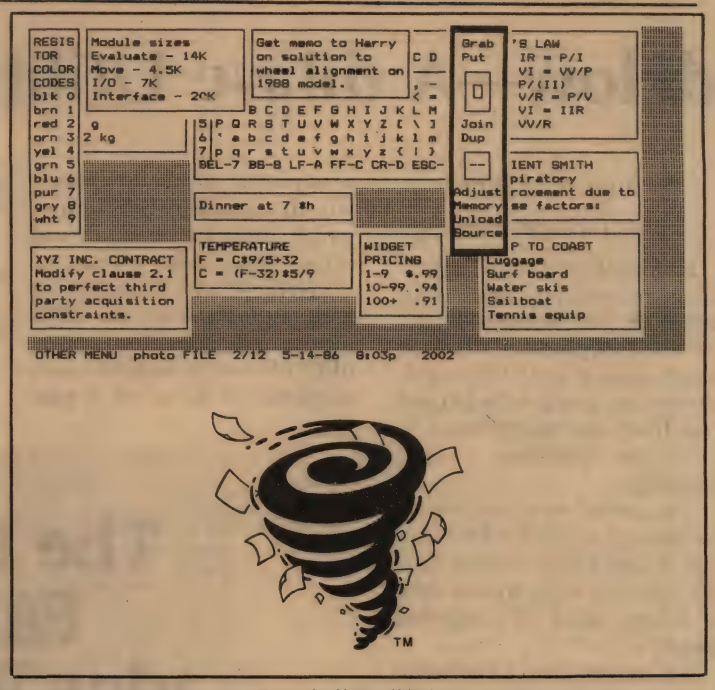
Once you've cycled to the proper note you wish in the pile, or which you've retrieved with the get command, you are in a position to work on or with that window. Type E (for edit) and you will be able to read through and/or edit that note. You may need to go into this mode just to read the note if it is large and not entirely visible via the window. In other words, think of a note as a mini-word processed document. As in word processing, where you seldom see your full letter or form so it may be here if your note is lengthy, or you made your note with a small window (or failed to increase the size of the window).

ESCape gets you out of your command. In general, TN is context-sensitive in the menus that pop up. For instance, each time you edit, a small edit window appears. Each time you leave editing, another small menu appears. As you select options, such as T (for trash current note—the one highlighted), something pops up in response; in this case, it would be the choice of Y or N to confirm choice or to change your mind. You may quickly type TY at once and Tornado Notes will keep up with you. In a similar way, you may perform disk functions, and after a note has been modified, unless the change is just temporary, you will want to do a disk save by typing DS (meaning the letter D followed by the letter S). There is no need for touching enter, nor for naming files.

To return to your application, from the command level (i.e., not in edit mode for a note), touch C (for clear). If and when you later activate TN via Alt J, you will return where you left off.

Okay, but of what use is this product?

That's a question best answered relative to how you function. I'm one of those types who was formerly neurotically compulsive about neatness,



Tornado Notes Windows

as well as writing everything down. Unfortunately, when I got over my neurosis, I lost a lot of my neatness and organization. But I still write everything down. Trouble is, I write on scraps all over the place, on an appointment calendar, on an eraseable wall calendar, on an eraseable magnetic board, and sometimes I still use a microcassette recorder. What a mess!

Since I already have at least a hundred loose notes all over the house, I personally could incorporate them all into a Tornado Notes file. At least things would be more organized! My sole fear would be loss of the information, as disks are sometimes wont to allow. To allow for this, I could make a lot of backups, and use TN's print capability to have hard copies. In addition, to make a note, your computer obviously must be on, so if it's out of commission, there's another possible problem, albeit a remote one.

Still, consider the kinds of things you can put on such notes: to-do lists, shopping lists, appointments, a mini-calendar (monthly or annually), lists of formulas, reminders about using commands of your favorite programs, other how-to reminders, etc.

Summary

I've hardly covered all the features of this wonderful product. Others include (some not personally tested by me): moving the order of notes in the pile (via Important and Bury commands); quick disk saves of just last note; the Form command for creating forms (such as a customer order, but you could use it for a primitive database); other commands and options; printing options; import and export with cut & paste from note to note, and, from note to word processor or vice versa; join two consecutive notes; duplicate notes; setup options, and more.

Tornado Notes is a wonderful, well made product. I have not used it long enough to think of any criticisms or suggestions for improvement, unless you count the misspelling of the word "efficient" in one of the notes. The manual is very well done, although the principal of Micro Logic, Mr. James Lewis, advised me that an improved manual was forthcoming. Although I do get to later use many of the products I review, it is not uncommon for use to be infrequent, particularly if I got the product solely as a review copy for review purposes. I anticipate that I will, however, use Tornado Notes to solve my personal clutter problem.

In view of its power, simplicity of operation, and pleasant interface, combined with a price tag just under $50, I heartily recommend Tornado Notes with no reservations should this product sound to you as though it could meet your needs as well as it meets mine. As I stated before, it is not copy-protected, and it can be run off a hard disk or floppy disk system of any IBM PC or compatible, clone, lookalike or workalike. I don't know the minimum RAM your system needs, but as long as you have DOS 2 or higher, and room for the 50K program plus enough room for note space, you should be fine.

With a 30-day money-back guarantee, how can you go wrong? Tornado Notes, $49.95, for PC and compatibles. Micro Logic Corp., PO Box 174/100 2nd St., Hackensack, NJ 07602. (201) 342-6518 or by modem: (201) 342-8101. ●

ACT NOW FOR SPECIAL INTRODUCTORY OFFER

29¢ each
DS/DD* 5¼" or SS/DD** 5¼"
Lots of 100
Each Disk 100% Certified at manufacturer
Soft Sectored
Sleeves Included

*DOUBLE SIDED/ DOUBLE DENSITY

For Prompt Service Call Toll Free
1-800-642-1148
OR MAIL TO: MEI / Micro Electronics. Inc. Diskette Offer
1555 W. Lane Ave.
Columbus, Ohio 43221

Rush me my quality diskettes. I understand that all MEI products are backed by a satisfaction guarantee or my money back!

Name _____ Company _____ (If Applicable)
Address _____
City _____ State _____ Zip _____
Phone ( ) _____
I own or use the following computer _____
I own or use the following printer _____
( ) I need **DS/DD** 5¼" diskettes. ( ) I need **SS/DD** 5¼" diskettes.
Ship me _____ (Order in quantities of 100) Sleeves Included
Add $4.00 for shipping and handling. (Add $3 for each additional lot of 100)
TOTAL ENCLOSED $ _____ (Check or Money Order)
OR Charge to my: ☐ Visa ☐ MasterCard
Account Number: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ Expiration Date ☐☐ – ☐☐

To Order Today, Call 1-800-642-1148 Offer expires November 15, 1986

29¢ each
DS/DD* 5¼" or SS/DD** 5¼"
Lots of 100
Each Disk 100% Certified at manufacturer
Soft Sectored
Sleeves Included

**SINGLE SIDED/ DOUBLE DENSITY

Lifetime Warranty

29¢ each

Soft Sectored
5¼" DS / DD or 5¼" SS / DD
DISKETTES
LOTS OF 100
SLEEVES INCLUDED

MEI has sold over 15 MILLION of these quality diskettes. And now, as a special introductory offer, you can buy these bulk diskettes (lots of 100) at the *guaranteed lowest price ever.* Each diskette track is 100% certified and guaranteed for a lifetime or your money back!

With a five-year growth rate of over 8000%, MEI was rated #16 in *INC.* magazine's 1985 Top 500 fastest growing privately-held companies. MEI is the fastest growing computer direct diskette marketing organization in the country.

For Prompt Service Call Toll Free
Call 1 (800)642-1148
OHIO ORDERS 1 (614) 481-4417

Call 1-800-642-1148

5.25" DISKETTE SPECS

PHYSICAL CHARACTERISTICS	
Diskette diameters	5.125 inch OD, 1.125 inch ID
Coating	Proprietary oxide formulation
Substrate	
Material	Polyethylene terepthalate
Thickness	.003 inches
Thermal expansion	coefficient less than 13.8 × 10^{-6} in./in./F°
Coating thickness	100 micro inches each side (burnished)
Hygroscopic expansion	coefficient less than 15 × 10^{-6} in./in./RH%
MAGNETICS	
Coercivity	320 oersteds nominal
Resistivity	less than 5 × 10^{9} ohms per square
Clipping level	excellent-guaranteed 50%
FUNCTIONAL	
Packing Density	up to 7958 BPR
Track density	48 TPI
Torque	
Starting	1.0 ounce force in. max.
Running	≤ 3.5 ounce force in. max. 1.0 force in. min.
MEDIA LIFE	Weibull B10 at 4 × 10^{8} Rev Weibull B50 at 10^{7} Rev
CERTIFICATION	Every Diskette is tested and certified to be 100% error-free. All Diskettes are certified to meet or exceed ANSI standards.

Includes: Sleeves, write protect tabs, reinforced hub ring

OFFER EXPIRES NOVEMBER 15, 1986

MEI's Unconditional Guarantee

Your satisfaction is unconditionally guaranteed or your money back. If for any reason whatever you are not satisfied with any Diskette purchased from us we want you to return it to us. We will be glad to exchange the Diskette or give your money back.

Offer Expires November 15, 1986
For Faster Service
CALL
1-800-642-1148

BUSINESS HOURS: MONDAY–FRIDAY 9:00AM to 9:00PM EST
SATURDAY 10:00AM to 6:00PM EST

Computer XT The Generic (Brand-X)

by Karl V. Amatneek

So you are in the market for a computer. You want to make sure that you pay the least and get the best. For reasons of your own, you are not looking at the advanced micros—the Macintosh, Amiga and Atari. Among the previous generation, the most active market is in imitation IBMs, but it is too active—the supply is overwhelming. This article will attempt to clarify the situation a bit.

IBM now has two main Personal Computer lines—the "XT" and the top-of-the line an entirely different "AT." They are expensive but they have the IBM prestige value.

There are many imitation IBM computers, all of them implying that they are "IBM-compatible," i.e. that they will run IBM disks. Actually, none of them can operate exactly like the IBM for fear of violating the IBM copyright. **See side bar on Incompatibilities.**

I have divided XT clones into two very different kinds of IBM XT imitators: Compatibles and Generics.

IBM-Compatibles with brand names such as Compaq, Radio Shack-Tandy, AT&T, Leading Edge, Kaypro, Epson, Panasonic and Sharp. The number of Compatible models is relatively small. Each is an original design striving to imitate the IBMs only in performance, not in size or shape. Feature for feature, Compatibles are more expensive than Generics ($1800-$5000). Their components are not physically interchangeable, and there is no second source for them.

Generic IBMs—there are hundreds of differing Brand-X models; they are assembled from a dozen off-the-shelf major parts made by many manufacturers (i.e. second sources). The Generics are sometimes misleadingly called "clones." None of the Generics are an exact copy of IBM. However, all major parts are physically interchangeable with IBM. At this writing, a rather complete Generic computer (8Mhz Turbo with 640K of RAM, 2 floppies, 20MB hard disk, modem, and monochrome monitor) sells from $900 to $1,400.

Let us recognize, before we go any further, that the price is attractive, but Generics may be too much trouble for a novice.

In this article, we will deal only with the Generics.

Generic XT Brands

Imitations of major XT parts (cases, motherboards, interface cards, disk drives) are available off-the-shelf; they are made by hundreds of competing high-tech manufacturers. Each is driven to make his product more sophisticated, better and cheaper. Generics are innovating constantly, independent of IBM, as well as driving down the price. Witness the flip-top case, the Turbo motherboard, the Hercules video graphics card, the ½-height disk drives.

In turn, these off-the-shelf parts are assembled into XT computers by mail-order houses, computer stores and individuals. Some Generics are sold by old-time mail-order houses with established mail-order guarantees. It is possible to buy all the parts and plug them together yourself. Some stores only sell parts, some charge extra for assembling them. No soldering is required; all parts plug into each other. **See side bar on Do-It-Yourself.**

The Generics are very competitively priced because they don't have the overhead, as the saying goes; also, most of the parts are manufactured in Taiwan or Hong Kong. However, American manufacturers (such as Xerox, Faraday, Wells American) are jumping into the fray. Many major parts of all Generic computers are physically interchangeable with real IBM parts, but in addition, the Generics try to match or surpass the real IBMs in performance. Many Generic parts do surpass the real parts. Few, if any, Generic parts have had shoddy-looking workmanship.

This wealth of facilities is seemingly geared toward assembling a single model of computer—the "Generic." Unfortunately, that is deceiving. In fact there are many different models, and one hardly ever knows what one is buying.

A Generic XT computer is assembled from among the following parts:

1) Case.
2) Motherboard.
3) Chips: microprocessor chip, BIOS chips, RAM chips.
4) Interface Cards (and expansion cards), floppy disk drive interface card, hard disk drive interface card, video monitor interface card ("video adapter"), paraller & serial interface cards, clock and calendar cards.
5) Power Supply.
6) Floppy disk drives.
7) Hard disk drive.
8) Tape backup for hard disk.
9) Modem (mounted on its own interface card).
10) Keyboard (separate, with curly plug-in cord).
11) Video monitor.

The following are the available choices for each item. The prices shown are very approximate lowest current prices of various advertisers; they are bordering on "wholesale." However, also bear in mind that, on the one hand, prices are constantly dropping, and on the other, no single dealer has the lowest prices of every item. Prices are shown here to make it easier to compare the prices of computers containing different sets of parts.

(1) Case $40—$75

There should be a cutout in right side rear for power supply switch, and a cutout for seven long and one short card slots. (The IBM PC has only five slots, and the switch of its power supply is in the back, not on the side.) Comes with loudspeaker, card brackets, rear hole covers and screws. Should be metal rather than plastic (and it usually is), for better shielding.

This brings up FCC (Federal Communications Commission) approval. The FCC test computer samples to evaluate to what extent they are likely to interfere with various radio services, i.e. how well they are shielded against radiation. A poorly shielded computer (i.e. one without FCC approval) may interfere with your neighbors' radio or TV reception. If your neighbors complain to the cable company or to the FCC, the FCC may order you to limit your computing hours. If your computer type has been checked and approved by the FCC, it is less likely that you will be interfering. Also, less likely that your data will ever be altered by electrical interference.

Slide-in box—this is the IBM version.

continued on page 114

Note: Comparison and Tech Criteria Charts are on page 111.

IBM REPAIR

Component Level

FLAT RATE PRICING

IBM & COMPAQ PRODUCTS

- PC/XT System board $90
- AT System board $175
- 5¼ Floppy Drive (Repair) $39
- 5¼ Floppy Drive Align $29
- Keyboards $65
- Multi function cards $65
- Single function cards $45
- Power Supplies $65

PRICES INCLUDE PARTS UNDER $20

OTHER COMPUTERS
- Columbia
- PC Jr's
- Apple
- IBM Portable
- IBM Compatibles & Clones

MONITORS & PRINTERS
$50.00 PER HOUR

HARD DRIVES CALL FOR PRICES

VISA **MASTERCARD**

PC REPAIR, INC.

TURNAROUND TIME 5 TO 7 DAYS

3145 Gateway Drive, Ste. J
Norcross, GA 30071
404-263-6044
404-263-6170

SERVICE CONTRACTS AVAILABLE

5¼" DS/DD DISKETTES 35¢ Ea. MIN. 100
•100% Error free
• Made in USA
FOR: LABELES, TYVEK SLEEVES & WRITE PROTECT. TAB ADD 4¢

3½" SS/DD $1.30 Ea. •W/ LIFETIME WARRANTY •100% ERROR FREE
3½" DS/DD $1.80 Ea. LABEL is included MIN. 25

DS/DD COLORED 12 DIFFERENT COLORS 75¢ Ea.

DS/HD BULK IBM AT MIN. 25 $1.70 Ea.

AMERICAL GROUP
MAGNETIC MEDIA DISTRIBUTOR
(818)906-1132
SAME DAY SHIPPING

C.O.D. Pick Up or
Send your order with check to:
AMERICAL GROUP
14200 Ventura Blvd., Ste. 201
Sherman Oaks, CA 91423
ADD $3.00 SHIPPING FOR FIRST 100 DISK & $1.00 EVERY 100 THEREAFTER.
CALIF. RESID. ADD 6½% SALES TAX.

XT TECHNICAL COMPARISON CRITERIA

Date _____

FEATURE	1	$	2	$	3	$
CASE: Flip-top;pwr sply cutout?						
MOTHERBOARD: 2?3?4?layers						
Socketed?						
Populated with 640K?						
Maximum 640K on board?						
7-1/2 slots?						
Turbo speed 8Mhz?						
Dual speed?						
Hard switch for speed?						
Enhanced board? (make list)						
Micro chip #						
Which BIOS chip?						
Memory test included in BIOS chip?						
Made in Taiwan/USA?						
POWER SUPPLY: 150 watt?						
FLOPPY DISK DRIVES: 1/2-height;DSDD?						
Brand						
FLOPPY DISK DRIVE CARD:						
HARD DISK FORMATTING FLOPPY:						
Boots on hard disk?						
Head-protection program?						
MONITOR, TTL-type, 12"?						
amber?						
brand						
MONITOR CARD, "HERC"-type, MONO?						
MONITOR, COLOR, RGB, 12"?						
video band-width MHz?						
lines x dots, colors?						
Brand						
MONITOR CARD: EGA?, CGA?, MDA?						
MODEM: 300 & 1200 baud?						
brand?						
WARRANTY: 12 month parts & labor?						
MONEY-BACK GUARANTEE?						
VENDOR						

XT SHOPPING COMPARISON

Date _____

Prices shown below were estimated average prices in August, 1986, for parts when they are in an assembled-and-tested Generix XT. For an XT offered by a vendor, for each included item, copy the price shown into a column. Then add it up. If the vendor's price is close to the sum, it's a fair price. Of course, lower is better.

PART		1	$	2	$	3	$
(1) CASE	$45						
INSTALLATION into case	$65						
(2) MOTHERBOARD, with BIOS chip and 640K of RAM:							
TURBO, 4.77 and 8.0 MHz	$270						
REGULAR, 4.77 MHz	$225						
(3) FLOPPY DISK DRIVES, 2	ea $90						
(4) MULTI-FUNCTION I/O card	$95						
(5) POWER SUPPLY:							
150-watt	$65						
135-watt	$55						
(6) KEYBOARD, "AT"-type	$75						
(7) MONITOR with interface card	$165						
(8) HARD DISK, with "controller card" and cables:							
INSTALLATION	$20						
10 MByte	$300						
20 MByte, Seagate ST225	$440						
30 MByte, Seagate ST238	$560						
(9) MODEM, 300 & 1200 baud	$150						
INSTALLATION	$30						
$ sum							
Vendor							
Vendor's price							
NOTES:							

TWO COMPUTERS & ONE PRINTER?

Share Your Printer
A quality switch makes sharing your printer easy. A smooth slide switch makes computer selection fast!

Two Parallel Cables In. One Parallel Cable Out.

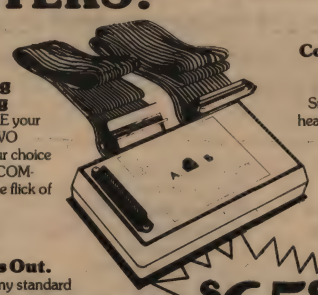
Switch has two female Centronics Connectors for each computer. One SIX FOOT Cable terminated in a Male Centronics Connector included for your printer! A quick & easy solution.

One Year Warranty

Fits In Your Workstation
Durable high impact enclosure (5"L x 5¼"D x 2¼"H). U.L. Approved.

$85.95 (#2110) Plus $3.25 Shipping & Handling

ONE COMPUTER & TWO PRINTERS?



Stop Plugging & Unplugging
Now you can SHARE your parallel port with TWO PRINTERS! Use your choice of printers on ONE COMPUTER with a simple flick of a switch.

One Parallel Plug In, Two Parallel Plugs Out.
To install, connect any standard Centronics Parallel Cable directly to the switch and connect the switch cables to each printer. The Printer Switch will redirect four signal connections to your chosen device.

Compact Design, Quality Construction.
Small (5¾" x 3⅜" x 1⅛") heavy duty enclosure. U.L. Approved.

One Year Warranty
Two 3½ Foot Printer Cables Included!

$65.95 (#2100) Plus $3.25 Shipping & Handling

A SWITCH WITHOUT A SWITCH!

No Switch To Wear Out!
Connect two parallel printers to one computer (IBM PC, XT, or compatible) and switch them with each printer's SELECT button. This cable will hook up one Primary and one Secondary Printer to your single Parallel Port. All print automatically goes to the designated Primary Printer. To re-route jobs to Secondary Printer simply De-Select the Primary Printer.

Hooks to Your PC & Primary Printer!
The seven foot cable plugs into your PC and Primary Printer. Use your existing Printer cable to attach Secondary Printer to the Junction Box. No other cables should be required. Powered by your PC!

$89.95 (#2150) Plus $3.25 Shipping & Handling

One Computer & Two Serial Devices?

Same Design as the Model 2100 above. DB-25 Pin connectors and two six foot serial cables included. Null modem switch for Chanel B built in. One Year Warranty.

$69.95 (#2120) Plus $3.25 Shipping & Handling

Shopping? **Mail $1.00 for our catalog of unique PC accessories**

CONNECTING PERIPHERALS?

A Connections Solution!
Our line of Multi-Purpose PC Data Switches can solve your device interconnect problems. *All Lines Are Switched* for complete device isolation. Our AB Switch operates either in One In/Two Out, or Two In/One Out Configurations. Expanded One In/Three Out or Three In/One Out switching is solved with our ABC switch.

Standard Connections!
Each switch comes with female connectors (either DB-25 pin or Centronics 36 pin) for industry standard hook-ups to all peripherals. Totally compatible with all devices using these connectors.

$54.95 Plus $3.25 Shipping & Handling

Quality Construction!
Our switches use dependable rotary selectors (No troublesome push buttons here) for long switch life. Strong All-Metal case filters RFI/EMI emissions and meets or exceeds FCC regulations. Gold-plated pins/contacts, soldered circuitry (Not Crimped), and no-skid rubber feet make this a terrific value. (Cables not included)

Model #2160 AB (DB-25 Pin) $54.95
Model #2165 AB (Centronics 36 Pin) $64.95
Model #2190 ABC (DB-25 Pin) $64.95
Model #2195 ABC (Centronics 36 Pin) $74.95
Measures: 7¼"L x 5"D x 2½"H, Weighs: 3½ lbs.

© Copyright 1986

30 Day Money Back Guarantee!

EASY TO ORDER

Simply Write or Call Tipz Direct, Inc. Please specify the product number (# number), quantity, and payment info (Visa, M/C, or Money Order). Be sure to provide your name, address, area code, and phone so we can contact you if any questions arise. Each order is shipped within 48 hours via U.P.S.

Simply Call 1-800-TO-ASK-US
(In California 415-567-4067) 8am-5pm PST

Information Available 8am-5pm PST.
CA Residents Add 6.5% Tax

Tipz

P.O. Box 690,
San Francisco, CA 94101-0690

© Tipz Direct, Inc.
Ad: CSM-125

The Best Daisywheel Printer Buy in the U.S.

MidWest Micro-Peripherals
135 South Springfield Street, Saint Paris, Ohio 43072
Phone (513) 663 5488

Friends,

MidWest Micro has landed for you the best continuous duty business quality daisywheel printer deal anywhere. The value absolutely cannot be beat. These are new, top-of-the-line printers and include the manufacturer's warranty.

We are one of the biggest marketers of printers for microcomputers and can assure you that you are saving hundreds of dollars without giving up a single benefit.

We have only a limited number of these printers, so call now for your best chance of getting in on this "once in a blue moon" deal.

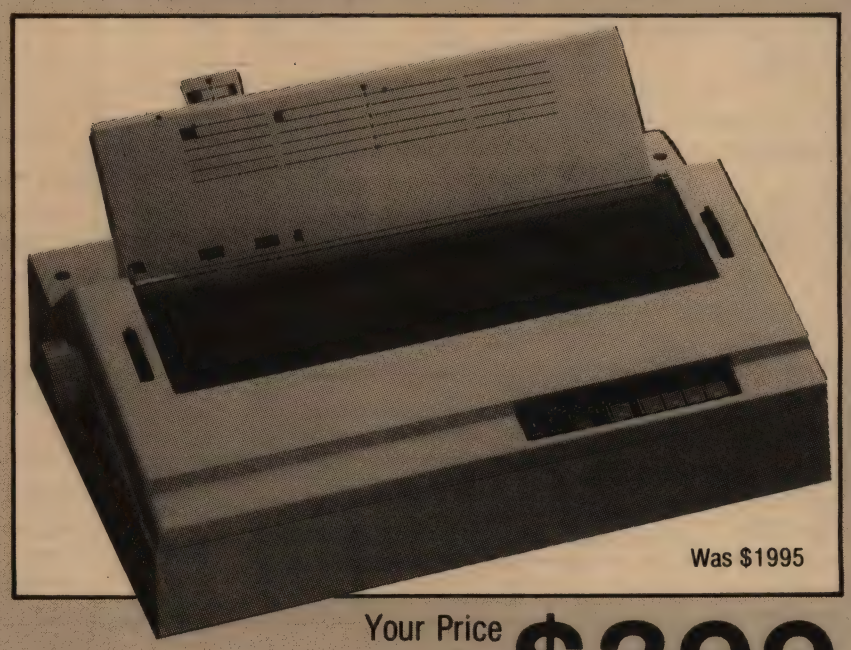
We at MidWest Micro will continue to do our best for you. Thank you for your generous patronage.

Sincerely,

Mark Runkle
President
MidWest Micro

Now you can get a full featured, wide carriage, 36 cps daisywheel printer. . .

COMREX™/EPSON™ CR-4



Was $1995

Your Price Just **$399**

2+ $369 3+ $349

You Get
- Superior Performance
- Fast 36 cps Print Speed
- 7 K Print Buffer
- Continuous Duty Cycle
- Wide 16.5 Paper Carriage

This top of the line daisywheel printer is made by a major market leader in daisywheel printer products. Its quality and durability are well known. Through special arrangements we are offering it to you direct. The price is far below the dealer quantity 100 price level. We fully support the product and make available all accessories that you may want for it. When this printer starts printing, hang on to your keyboard. It sprints through correspondence at a rapid 36 characters per second — that's one-third faster than the average daisywheel printer.

This bidirectional, logic seeking marvel lets you adjust the hammer intensity to print anything from single-page letters to five-part forms with equal clarity. A variety of impressive typestyles give you added print versatility.

It is exceptional in many other ways. The 15½" wide carriage briskly prints all your ledgers, spreadsheets, and extra wide business graphics with ease. With the optional cut sheet feeder and tractor feeder, you can print several copies on your letterhead and switch to pin-fed paper for high volume word or data processing.

The 7K buffer holds a substantial amount of data while its printing.

The average life of the print wheel is 10 million characters. Which means that you can run it eight hours a day — every day of the week — for almost two full years. Of course, under more normal usage, it will handle your business correspondence and graphics for up to five full years without service. That's impressive.

Quiet quality.
What your eyes don't tell you, your ears will. Because this printer is much quieter than many more expensive printers. So you can keep the noise down while you keep the cost down.

Specifications

Print Speed	36 CPS (Shannon text)
Print Wheel	96 petals/wheel, cassette type, ASCII stand.
Print Wheel Life	10 million char./wheel
Characters/Line	132 characters (1/10"), 158 characters (1/2"), 198 characters (1/15")
Paper Width	16.5 in max (419 mm)
Copy Capacity	Original (45 kg) + 4 copies (15 kg) (total thickness 0.35 mm max.)
Carriage Motion	Bidirectional, logic seeking
Carriage Rtrn Speed	750 ms (at 13.2" return)
Line Spacing	6, 4, 3 lines/inch, 1/48" proportional increments
Paper Feed	Bidirectional, logic seeking
Paper Feed Speed	4"/second

Available Ribbons	Ribbon Life
Single-strike black carbon film	60,000
Multi-strike black carbon film	150,000
Single-strike black correctable film	70,000
Multi-strike black fabric	500,000
Single-strike red film	2,000
Correction tape	1,500

Interface	Standard RS-232C – Serial
Buffer Size	7K
Control Panel	Indicators: Select, Power, Alarm, Line, Pitch, and Copy (LEDs) Switches: Select, Line Feed, TOF, Line, Pitch, and Copy
Noise	Operating – Less than 65 dB
Temperature	50 to 105 F – 10 to 40 C (operating)
Humidity	20% to 80% non-condensing (operating) 5% to 90% non-condensing (storage)
Power	120 V, 60 Hz (Optional: 120 or 220 - 240 V, 50/60 Hz) 130 W Max.
Dimensions	21.18 (W) x 7.65 (H) x 15.15 (D) inches (538(W) x 194.5 (H) x 385 (D) mm)
Weight	33 lbs (15 kg)
Optional Features	Tractor feeder, Auto Cut Sheet Feeder, Single and Multi-strike ribbons, Interchangeable printwheels (Numerous languages and typestyles)

VISA MasterCard AMERICAN EXPRESS

For your protection we check thoroughly for stolen credit cards.

CALL TOLL FREE FOR INFORMATION OR ORDER
(800) 423-8215
IN OHIO CALL - (800) 321-7731 • DEALERS CALL - (800) 528-4504
OHIO DEALERS CALL (800) 222-6571
HOTLINE: 513-663-4992 (For Technical Assistance or Information on Your Order)

MONDAY-FRIDAY
9 AM - 6 PM (EST)
CLOSED SATURDAY
PRICES SUBJECT TO CHANGE
AVAILABILITY AND TYPE ERRORS

MidWest Micro-Peripherals

135 S. Springfield St., Saint Paris, Ohio 43072

MEMBER DIRECT MARKETING ASSOCIATION

All equipment shipped factory fresh with manufacturers warranty

HIGH TECHNOLOGY — NOT HIGH PRICES

TOO GOOD TO BE TRUE!!

SAVE WITH CONFIDENCE – CALL MIDWEST MICRO

NO TAX CHARGED TO RESIDENTS OUTSIDE OHIO
SAME DAY SHIPPING ON ALL ITEMS IN STOCK
TECHNICAL SUPPORT

PRICE GUARANTEE
We at MidWest Micro guarantee that we can save you up to 69% or more on your purchase of new fully warranteed equipment and supplies. And we will still give you friendly, courteous service. Call today and Save With Confidence!

ONE CALL SHOPPING TOLL FREE
DEALERS CALL
800-528-4504

MidWest Micro-Peripherals
135 South Springfield Street, Saint Paris, Ohio 43072
Phone (513) 663 5488

Fellow Computer Users,

Through special arrangements we have been authorized to offer you one of the most popular printers of all time at a "give away" price. Yes, we've sold thousands of the ever popular Gemini 10X printers at nearly twice the price. The 10X is a great choice for both business and home applications. Those already using our Star Gemini 10X's include about everyone from Bell Labs to my brother's kids.

I'm absolutely delighted to be able to offer you this durable and versatile printer for only $179. And you can expect the same friendly, courteous service both before and after the sale plus full warranty care from MidWest Micro.

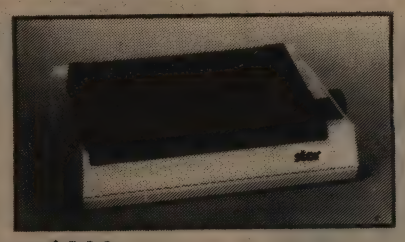
Our supply is limited and they can't last long at this unbelievable price. So call today and get the buy of the year!

Sincerely
Mark L. Runkle
President
MidWest Micro

star micronics · inc
Buy from the nations largest Direct Authorized Star Micronics Dealer and Service Center

NOW you can get the most printer for your dollar with. . .

Gemini 10X



NOW ONLY
$179
LIST $399

If you are looking for a top quality printer at an affordable price, you've found both in the Gemini 10X. The Gemini 10X operates bi-directionally at 120 cps. It switches from standard 80 column printing to 132 column condensed and 96 standard ASCII characters. This gives you the capabilities to do everything from recipes to spreadsheets. The character matrix offered includes the descenders, emphasized, double strike, block graphics and hi and low bit image graphics. These features give the Gemini 10X versatility enough for use in your home or office. The Gemini 10X also features a buffer expandable to 8K that lets you continue to work – not waste your time waiting on your printer. Breakdowns? Virtually unheard of with the Gemini 10X – with a print head life of over 100 million crisp, clean characters. The Gemini 10X comes complete with both friction and adjustable tractor feed. It even includes a free roll paper feed mechanism for greater economy.

Quantity Purchasing Buy 3+ @ $169 ea.
6+ @ $159 ea.
25+ *$CALL$*

Complete star Gemini 10X PRINTER PACKAGE

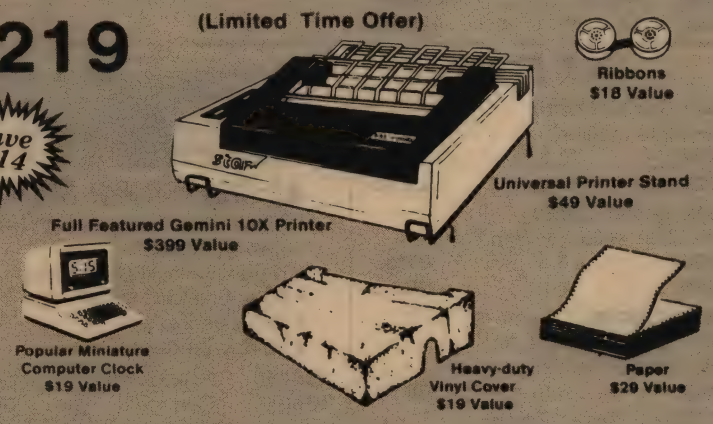
From MidWest Micro

JUST **$219** (Limited Time Offer)

Save $314

Printer Package Includes:

1. Full Featured **star Gemini 10X Printer**
2. A **Universal Printer Stand** which tilts printer toward you for easy access and creates space for organizing paper
3. Attractive Heavy-Duty vinyl **Printer Cover** – anti-static and anti-dust
4. Plenty Pack of 20# bond clean-edge fanfold **Paper**
5. 2 Super length **Ribbons** for Gemini 10X
6. **Miniature Computer Clock** with 5 function quartz works and swivel monitor stand
7. Full **1 year Warranty** parts and labor
8. Free use of MidWest Micro's Customer **Support Hot Line** (513-663-4992)



Quantity Purchasing 3+ $209 6+ $199

star Gemini 15x (15½" carriage) Buy 1 @ $269
3+ @ $259
6+ @ $254
25+ $CALL$

star Gemini 15x Package $309 3+ @ $299
Includes Same Great Bonuses as 10x Package

For your protection we check thoroughly for stolen credit cards.

CALL TOLL FREE FOR INFORMATION OR ORDER
(800) 423-8215
IN OHIO CALL - (800) 321-7731 • DEALERS CALL - (800) 528-4504
HOTLINE: 513-663-4992 (For Technical Assistance or Information on Your Order)

MONDAY-FRIDAY
9 AM - 6 PM (EST)
CLOSED SATURDAY
PRICES SUBJECT TO CHANGE
AVAILABILITY AND TYPE ERRORS

MidWest Micro-Peripherals

135 S. Springfield St., Saint Paris, Ohio 43072

MEMBER DIRECT MARKETING ASSOCIATION

All equipment shipped factory fresh with manufacturers warranty

HIGH TECHNOLOGY — NOT HIGH PRICES

Computer XT continued from page 110

Flip-top box—this is the Generic improvement. It lets you mess around inside conveniently, such as to insert and remove chips and cards. How often will you be doing that? Probably not often, but it depends. The flip-top box may be more radiation-prone than the slide-in.

(2) Motherboard and the BIOS chip.

The motherboard with its BIOS (Basic Input/Output) chip is the computer system unit proper. The BIOS chip contains a program which all the application programs (word processor, etc) have to utilize because it is the basic operating system of the computer. Differing motherboards and BIOS chips in effect create different models of Generic computers.

It is the copyright on the IBM BIOS that causes the fundamental difference between IBM and its imitators. Since IBM will not sell the BIOS chip set (five chips) separately from the computer, commercial builders use a BIOS that is non-infringing.

Multi-layer board—as opposed to the usual two-layer. Probably more immunity from electrical interference with 8 Mhz operation, but also more expensive. Detecting and replacing defective solder—in chips is much more difficult, but chances are that the whole motherboard would have to be replaced anyway. A toss-up. $200 with BIOS chip, and with 640K of RAM memory plugged in. Boards are also available without memory chips.

Socketing—any of the versions below may have sockets for all the chips, or else some chips may be soldered in. The all-socketed version allows easier troubleshooting and repair, but it is believed that the sockets themselves will in time cause problems due to corrosion within the socket.

640K vs 256K. Room for either 256K or 640K of RAM chips. The boards that advertise "256K expandable to 640K" may or may not have on-board sockets for additional RAMs.

Memory Test.— The BIOS chip that comes with the motherboard should have a memory test program on it.

Enhanced board—there are few of these around—this motherboard may include on board the floppy disk controller, I/O interface parts and clock-calendar. The board may have only six slots (rather than the normal eight) for interface cards. See Mulitiple I/O.

Turbo.— This is the buzzword for higher-speed motherboard—a Generic advance over the IBM: typically 8MHz instead of IBM's 4.77. These have a faster clock speed, and thus improve the speed of calculating programs such as spreadsheets.

Dual speed operation—both 4.77 and 8MHz—is the way the Turbo boards often come. This is important since some programs (mainly graphics) will not run at the higher speed. The speed is switchable from the keyboard or by program; on some boards there is also a hard switch.

(3) Chips

Most often the purchaser does not have to bother with plugging in or swapping of chips—they come with the motherboard. There are some exceptions.

RAM chips (memory). Some motherboards and some interface cards come unpopulated (with RAM sockets empty) or partially populated. A set of 18 RAM chips runs about $20 for 64K-chips, $50 for 265K.

High-speed Microprocessor chip, The NEC V20. Direct replacement for the 8088 chip of the XT for 10-20% effective speed increase. May not work with Turbo clock. $14.

BIOS Chip. Not always included with motherboard. Different brands of BIOS chips may fail on different programs. $30.

Math Coprocessor chip, the 8087 (or 80287 for 80286 CPU). Will only work with programs written for it, such as Lotus 1-2-3. 5MHz $115, 8 MHz 8087-2 $130.

(4) Interface Cards (expansion cards, adapters)

These cards permit one to expand the computer past bare bones condition by adding disks, video monitor, printer, and other peripherals. They provide the required electronics as well as connectors for plugging in the peripherals. One has to make sure that the cable connecting the card with the peripheral comes with one or the other, else it will have to be bought separately. The cards plug into any of the eight slots in the motherboard. The various functions are often bunched together on one card. (his may create a minor problem with some BIOS chips—if more than one serial and one parallel port (among all the cards plugged in at any one time), they will have to be programmed not to interfere with each other.

Interface card for floppy disk drives. $32. However, see Multiple I/O below.

Interface card and floppy disk for hard disk drive. The floppy disk should provide the ability to boot on the hard disk (without needing a floppy for booting). It should also have a Park or SIT (Seek Inner Track) program so that you can park the head in the garage before moving the computer. No brand information.

Interface Card for video monitor.

The choice of video card and monitor is difficult. See side bar on Incompatibility.

Interface Card for printer. "Parallel card." $19. Also see Multiple I/O below.

Serial Interface card. $29. Also see Multiple I/O below.

Clock-and-Calendar card. $35. Also see Multiple I/O below.

Multiple I/O Interface card. A single card may contain printer, serial, floppy interfaces as well as clock-and-calendar and spooling. $80. There are other versions of this card, with many different combinations.

(5) Power Supply. $70—$120

The power supplies of different manufacturers look alike, but some should be more failure-prone than others. No brand information available. Check out for fan noise. Be sure that power supply is U.L. approved.

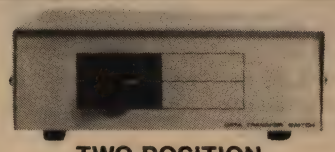
130-135 watt. $60. This is the more popular size. The IBM XT has a 125 watt supply.

continued on page 115

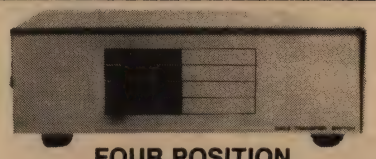
GIVE COMPUTER SHOPPER for the Holidays

See details on page 54.

DATA SWITCHES



- High Quality Rotary Switch
- All Pins Switched
- Fully Shielded
- Gold Plated Contacts
- Anti-skid Feet
- 90-day Warranty



TWO POSITION
#38610 . . . RS232 Type $28.95
#38640 . . . Centronics Type . . . $29.95

FOUR POSITION
#38615 . . . RS232 Type $42.95
#38695 . . . Centronics Type . . . $45.95

CABLES

RS232 Serial Cable
25 Pin Male to Male
#38605 . . . . . 6 ft. $7.95
#78620 . . . . . 10 ft. $9.95

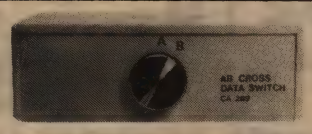
RS232 Serial Cable
25 Pin Male to 25 Pin Female
#38630 . . . . . 6 ft. $7.95
#78625 . . . . . 10 ft. $9.95

Parallel Cable
36 Pin Centronics Male to 36 Pin Centronics Male
#38680 . . . . . 6 ft. $8.95

IBM Type Printer Cable
25 Pin Male to 36 Pin Centronics Male
#38645 . . . . . 6 ft. $8.95
#78630 . . . . . 10 ft. $10.95

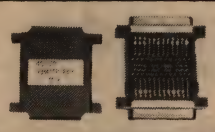
IBM Type Keyboard Extension Cable
5 Pin Din to 5 Pin Din
#78635 . . . . . 6 ft. $4.75

IBM Type Modem Cable
25 Pin Male to 25 Pin Female
#78640 . . . . . 3 ft. $6.85



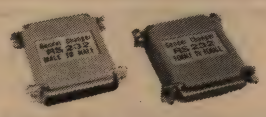
AB CROSSOVER SWITCH
- Allows Two Computers to Share Two Peripherals
- High Quality Rotary Switch
- Fully Shielded Metal Case
- Anti-skid Feet
- 90-day Warranty

#38650 . . . RS232 Type $43.95
#38655 . . . Centronics Type . . . $45.95



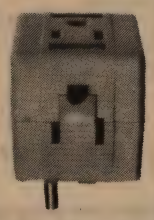
RS232 JUMPER BOX
- Make Custom RS232 Configurations
- 25 Pin Male to 25 Pin Female
- Complete with 25 Jumper Wires

#78645 . . . . . $7.85



GENDER CHANGERS
#38620 . . . Male to Male $5.95
#38625 . . . Female to Female . . $5.95
#78610 . . . Null Modem $6.95

SPIKE PROTECTOR



- Helps Protect Electronic Equipment from Transient Spikes
- Mov Protection
- Three Outlets

#38690 . . . . . $4.95

DISKETTE NOTCHER
#38600 . . . . . $4.95

DISK DRIVE HEAD CLEANING KIT

- Can be used on single or double sided drives
- Can be used fifteen times
- Contains one 5¼ cleaning diskette and one bottle of cleaning fluid

#38675 . . . . . $3.75

DALCO ELECTRONICS
513-435-1058
formerly 513-748-2535
Mon.-Fri. 9-6

Mail Orders to:
P.O. Box 494
Franklin, OH 45005

VISA/MASTERCARD ACCEPTED
Dealer Inquiries Welcome

Terms:
- Check or Money Order
- Mail Orders Add $2.00 Shipping
- COD Add $2.00
- Ohio Residents: Please Add 6% Sales Tax
- Prices Subject to Change Without Notice

Computer XT
continued from page 114

150-watt. The idea is to have reserve power for parts to be added in the future (such as tape backup for hard disk). However, as the art advances, the power-demands of additional equipment are going down (viz, drives take less current), and the 150-watter may be unnecessarily heavier. $70.

(6)Floppy Disk Drives, 2. $85 ea.

In the case, space has been provided for four "½-height" drives. This permits two floppy drives, one hard disk, and one tape backup.

⅓-height, ½-height or full height. Full height is obsolescent; it is the way the IBM comes. The ½-height is the popular one, the ⅓-height may be too new. $80.

"Density." Floppy drives can be a Single or Double recording Density (SD or DD). Double-Density will record twice as many kilobytes on a disk. DD is standard.

Sidedness. Double-Sided drives (DS) have two heads, one on each side of the disk. The popular DSDD drives will record 360 Kilotytes on a disk (150 doube-spaced typewritten pages).

(7) Hard Disk Drive, card and cable. $470.

In the hard disk drive you have to choose height, capacity and brand name. The price sometimes includes the interface card and sometimes also the installation. Watch the fine print. Hard disks are fragile. Even the most innocent drop of the computer may bang a head against the disk and dent it. Manufacturers take two steps to improve this: using metal-plated or polycarbon coated oxide disk; and shock-mounting the drive.

Height.— ½-height is the popular one.

Capacity.— 10, 20, 30, 40 MB. The 40 MB is $470.

Brand.— Some brands have belt drives, some are direct-driven. Some are noisy, others relatively quiet. Some may be out of business. No hard information available, but Seagate is said to be O.K..

There are also hard disk drives mounted on an interface card. There may be some software problems. In any case, it is more useful for portable Compatibles, where no room has been provided in the case for a hard disk. $485.

(8) Backup for Hard Disk

Among the several advertised backup systems, three methods are used: (1) Recording on spooled tape, (2) recording on cartridge tape, and (3) recording on your own VCR. 25 MB $345. Other capacities available. You can also backup on floppies using a software program like "Fastback."

(9) Modem Card $140

300-1200 baud. Everybody claims that his modem is "Hayes-procedure compatible," but sometimes there are unpleasant differences. The required "communications" disk may be included in the price; many such programs are in the public domain. Spend a little more and buy a Hayes if complete compatibility is very important to you.

(10) Keyboard $60

There is a choice of more than four different styles of keyboard. Make sure you look at the "AT" style. Look for a large, L-shaped Return key, three lighted displays above the keyboard on the right, and function keys on the left of the keyboard (not above). Try the board, feel the tactile feedback, and study the layout to make sure it suits your typing habits. Two keyboards that appear to be the same may actually be quite different. A keyboard can be incompatible with some software. $60.

(11) Monitor

See side bar on Incompatibilities.

(12) Shopping

Every ad dangles another combination of parts, and so it is difficult to compare the relative price of the various offers.

The complete computer could consist of the following:

Turbo motherboard with 640K of RAM, and BIOS chip.

2 floppies.

20 or 40 Mbyte hard disk, with card and cable.

Modem (300 and 1200 baud) on an interface card.

Multi-function I/O interface card.

Monochrome monitor, with Hercules-type card or color card with RGB color monitor.

Such an assembled and tested computer has been advertised for about $1,300.

To assist in comparing prices, use the Shopping blank. To keep a record of technical differences, use the Technical blank.

(13) Warranty of Parts and Labor and Money-Back Guarantee

Read the fine print, and consider the integrity and probable longevity of the vendor.

Do-It-Yourself XT

Because it is so simple, one is tempted to assemble one's own XT. Probably only three tools will be required: a socket-and-driver (6mm or 7/32"); and a Phillips and normal screwdrivers, not longer than 4". The process should take about 2 hours, and may take less.

The following are the general steps that have to be taken in assembling a set of parts. You should have a specific set of instructions if you buy a set of parts from a single dealer.

1. Case—Mount the speaker, card-support brackets and rubber feet.
2. BIOS Chip and other chips— Insert into the motherboard such chips as come separately.
3. Motherboard—Set the DIP switches per instructions. Place the board in the case and screw it down.
4. Power supply—Fasten the power supply to the back of the case. Plug it into the motherboard. (Depending on the arrangement of components, it may be easier to install the disk

continued on page 116

Incompatibilities—BIOS Chip and Video Card

"Compatible" is a schizophrenic word. To the customer it means "it works exactly like." To the dealer, even "100% compatible" means "I hope the customer doesn't too soon run into a program that won't work." You will play it safe if you assume that it means "not quite compatible."

Two Separate Sources of Incompatibility

Lack of compatibility has two possible major causes: the BIOS chip, and the video interface card. Any incompatibility in either one may prevent a program from working. There are many competing BIOS chips, and four types of video cards (and their imitators).

(1) The BIOS chip

The BIOS chip (by-ohs—Basic Input-Output System) contains the program that organizes the chips on the motherboard to talk to the peripherals. IBM has copyrighted the BIOS chip, and that is what causes the fundamental difference between IBM and its imitators.

Actually, none of the Generics can operate exactly like the IBM for fear of violating the IBM copyright. The Taiwan government has gone so far as to develop an imitation IBM BIOS (on a ROM chip) which IBM has checked for non-interference with their copyright.

Because of copyright, none of the Generic motherboards will operate absolutely all IBM programs. Over the last year the situation seems to have improved to the point where most of them will operate most programs.

There is a variety of suggestions as to which programs to use to test compatibility. All of the suggestions contain the Flight Simulator. It proves out both the BIOS chip and the graphics card. Some also suggest Lotus 1,2,3. For sure, you want to test the computer thoroughly on the programs that you know you will be using, and do it before money changes hands, or else, do it during the guarantee period, not the day after!!! (Assuming all along that your receipt shows a money-back guarantee.)

You can also try another brand of BIOS chip. They are direct physical substitures.

(2)The Video interface card ("video adapter")

If the computer is used only for text, there should be no problem with the video card. If a data base or a spreadsheet is used, so long as the data are displayed as text, not plotted, all's well. But if the program is used to plot the data, incompatibility threatens.

For monochrome operation the currently popular interface card is the Hercules Monochrome Graphics Adapter (HMGA). It generates high-quality text and graphics (charts, graphs, drawings). Imitations of HMGA sell for as little as $70.

Before the Hercules the monochrome card was the IBM MDA (Monochrome Display Adapter). It would generate only text, no graphics. While the Hercules card would generate both, some programs will not work with it. However, among those that do are Lotus 1,2,3, Framework, and MS Word.

IBM also has a video card called CGA (Color/Graphics Adapter). CGA processes both graphics and color, both poorly. However, many programs will run with it.

A competitor of Hercules, the Paradise Monochrome Adapter, will run all of these programs in monochrome, but also poorly.

Color operation is a nest of worms because of incompatibilities, as well as the need to pair up a video card with a matching color monitor. And there is another video card, the IBM EGA (Enhanced Graphics Adapter). Some of the programs that will run on the Hercules card will not run on the EGA. There are now some expensive cards designated as EGA-plus that will supposedly run all programs; some of these cards are automatic, some have DIP switches to pick the right mode. The main reason to avoid color is that text display is not as clear as with monochrome. The main reason to buy color is to play with the Flight Simulator program.

Video Cards

There are four types of video cards on the market today. One function performed by the card is generating the video scan. The figures in parentheses are the number of dots horizontally times the number vertically.

(1) MDA—IBM Monochrome Display (text) Adapter (640x350).

(2) CGA—IBM Color Graphics Adapter (320x200).

(3) EGA—IBM Enhanced (color) Graphics Adapter (640x 350). Imitation, $235.

(4) HGA—Hercules (monochrome) Graphics Adapter (720x348). Imitation, $70. This is the currently popular one.

The MDA does no graphics—only text.

The CGA is obsolescent because it was created when RAM memory chips were expensive.

The EGA is IBM's latest.

The Hercules is a powerful improvement over IBM.

For each of the above there are cheaper imitators, "compatibles."

Since these four types of cards work differently, they can create a graphics display problem. There is no problem with displaying text. The problem comes up with plotting of data and with pictures, i.e. graphics. Some graphics—employing programs will work with one or another video card, not with others.

Provided the BIOS is OK, a word processor program will work well regardless of the type of video card used. So will Lotus 1,2,3—until you plot the results. Then it will work with some video cards, not with others.

American Ingenuity to the rescue! There are now several cards that will work with any of the four types. Some will do so automatically, some have DIP switches for selecting the type.

Disknote: Another Kind of Notes Program

by Michael W. Ecker

As you can see from my Tornado Notes review in this section, programs for notes are becoming quite popular, whether in free form, as in that program, or Sidekick, or as attached to specific applications, usually to Lotus 1,2,3 or Symphony, as in other programs. Some of the bigger name programs include Smart Notes ($80) and Note It.

I had just heard very good things in Info World about an inexpensive version of the latter genre—the kind of notes program with notes attached to specific cells. So, to complement the review of Tornado Notes, I thought it would be a good idea to take a quick preview of Disknote, by Philip Frankel.

At $20, heavy users of Lotus 1,2,3 or Symphony can attach notes to specific cells. You load the program by typing Disknote, the name of the program, doing so at DOS ready. Since Disknote is memory-resident, you need only know to invoke it from Lotus by Ctrl F2, meaning hold down the control key and touch the F2 function key.

Now you will see any existing note, and you can edit it further (if one exists), or edit/write a new note, get help, and then either ESCape or save the note.

I was a little disappointed, after reviewing Tornado Notes, to see that Disknote, besides being specific to spreadsheets, does not keep the notes in memory, even though the program itself is RAM-resident. In fairness, this is probably by design. After all, most spreadsheets are big enough already, and to have to carry around notes—particularly when they may not be needed—is a burden. Since I don't use a hard disk system (at least not yet), I notice the disk accesses to my floppy drive. In retrospect, considering the purpose of these notes, I cannot say that I fault Mr. Frankel for this design. In fact, despite my initial disappointment, the more I thought about it and played with the program, the more I admired the arrangement. It my not be best for may personal needs—organization in general—but I can recognize that there are a lot of users—power users, even-of spreadsheets, all of whom have a need for such a product.

Interestingly, notes thus saved are maintained as ASCII files with names which match their location. I hastily composed a little spreadsheet and attached notes to cells A1 and B1. Disknote then saved those notes to cells A1 and B1. If you wish, you can even access the notes with a word processor or text editor, or even read them with the TYPE command from DOS.

Since this is only a quick look and not a full-scale review, I will leave interested readers to ponder for themselves whether this sort of product is more attuned to their needs. This particular product's advantage stems from its conservation of memory (since notes are saved to disk, not to RAM), and its attachment to specific cells. Since the notes are not free-form, as with Tornado Notes, there is no retrieving or going through a pile of notes. On the other hand, the specific application to spreadsheets limits the kind of notes one is using in this product, and you don't have the versatility of a product such as Tornado Notes. You also don't get a manual, either. But then again, you pay less, too.

If you need free-form notes available during many applications, Tornado Notes is my recommendation and personal choice. But, if you're a major spreadsheet user and need notes to attach to the cells of your spreadsheet, and you don't want to spend a bundle on the bigger names, consider Phil Frankel's product. It has quite a few other features, and the price is right if you can use this product.

Disknote, $20 plus $3 shipping.

Frankel also sells a utility called Disk-to-Screen for $20, and purchasers who want both may have the two for $33 (plus shiping); Philip Frankel Software, P.O. Box 31614, Seattle, WA 98103. ●

Computer XT
continued from page 115

drives before the power supply.)

5. Floppy disk drives—Make sure the jumpers are set in accordance with the instructions supplied; remove terminating resistors as indicated. Mount the disk drives into the case using the brackets supplied. For operating convenience, the two floppy drives should probably be placed in the two lowest positions, leaving the two upper positions for a hard disk, and a hard disk backup.

6. Floppy disk interface card—Plug the floppy disk interface card into a slot, and plug the drives into it.

7. Video interface card—Plug the video interface card into another slot, and plug the video cable into it.

8. Keyboard—Plug the keyboard cable into the motherboard.

9. Finishing up—Plug the speaker into the motherboard; plug the power cord into the power supply and into a wall outlet.

10. Video Monitor—Plug in the video cable. Plug in the power cable.

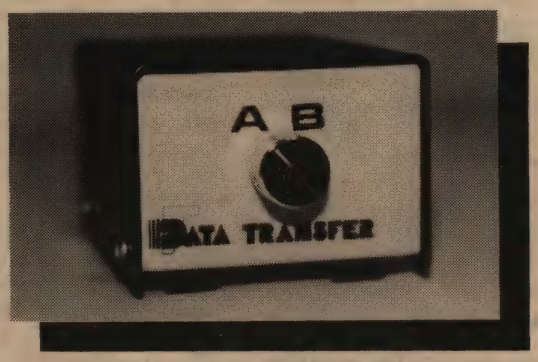
11. Power up—Insert the system disk into drive A and turn on the power on the monitor and computer. If your BIOS chip contains a memory check, it will take place at this time, followed by a prompt for entering the time and date.

12. Debug—If something doesn't work, is it your mistake, or a defective part, or an incompatible part? Hardware or software? Or else, everything may work, and you will have no problem at all! ●

ATSI COMPUTER SERVICE
FIXED PRICES
SPECIALIZING IN COMPONENT LEVEL REPAIR
IBM PC/XT COMPUTERS
* SAMPLE PRICES *
IBM Keyboard $50
IBM Power Supply $50
5¼" Floppy Drive $40
PC/XT System Board $95
* ALL PARTS INCLUDED *
DISK DRIVE ALIGNMENT INCLUDED WITH REPAIR
QUANTITY DISCOUNTS
CALL FOR INFORMATION AND PRICE LIST
SERVICE CONTRACTS
Advanced Technical Services Inc.
7509 Connelley Drive, Suite B
Hanover, Maryland 21076
(301) 768-5046 or 768-5064
Advanced Technical Services Inc.
611 Loftstrand Ln.
Rockville, MD 20850

TOOLING AROUND YOUR PC?
$27.95
Plus $3.25 Shipping & Handling (#2660)

Finally, A Toolkit Just for PC Owners!
All the right tools for tinkering with your PC have now been gathered into a PC Toolkit! No more improvising with damaging substitutes on your expensive PC. Eleven fine quality tools come complete in a padded zip-up Tool Case to neatly store in your desk drawer.
Quality Tools Designed for Special Jobs!
Every instrument is designed specifically to open your PC, insert/remove boards (or chips), and seal it up again without stripped screws or broken components. The kit includes 4 screwdrivers (large/small Philips & Regular), ¼" nut wrench, 5/16" nut wrench, extra long tweezers, chip puller/extractor, custom Torx screwdriver, unique "Grabber" for retrieving dropped parts, and even a spare parts tube to stow any leftovers. Each tool fits in its own elastic storage strap so you'll always know where to find it!
TO ORDER
Simply Call 1-800-TO-ASK-US (Calif. 415/567-4067) 8am-5pm PST
Call or Write Tipz Direct, Inc. Specify product number, quantity, & payment info (Visa, M/C, or M.O.). Include name, address, area code, & phone. Orders are shipped within 48 hours via UPS. CA Residents Add 6.5% Tax. 15 Day Money Back Guarantee
Tipz
CSM-266- P.O. Box 690. San Francisco. CA 94101-0690

DON'T FIGHT IT...SWITCH IT!
Now you have the FREEDOM to choose either printer without switching cables.
offers the finest switch box made featuring:
★ Belden 24 gage double-shielded cable
★ Gold-plated contacts
★ All metal end connectors
★ Anti-skid rubber foot pads
★ 16 gage steel shell
★ Hand crafted in the U.S.A.
★ A FULL 3 YEAR LIMITED WARRANTY!
Data Transfer
5282 Brackenhouse
Columbus, OH 43220
WAS $79.95
NOW $59.95 Plus $3.00 Postage and Handling
Includes 8 feet of cable.
We carry 35 models to choose from.
Call for pricing and information.
EXCLUSIVE CABLE FLEXIBILITY PLAN
If you need additional cable length, just tell us the dimensions you need when ordering and we will custom cut your cables. (Add $2.50 per foot).
VISA, MC, Amex, Diners Club, Carte Blanche & C.O.D. accepted. Ohio residents call 1-800-524-2233 and add 5½% sales tax.
VISA MADE IN U.S.A. MasterCard


TO ORDER, CALL TOLL FREE:
1-800-238-2233 EXT. 276

BASIC Is Spoken Here

by Hal Nieburg

When you bought your IBM PC, you also received two BASIC versions on the DOS disk. If you own a clone you had to use GW BASIC on a separate diskette. You probably know by now that you can use the program to run files that end in the extension BAS. On the same disk is a program called SAMPLES.BAS. Its graphics, games, and musical selections are intended to demonstrate the variety and power of BASIC, and to induce the user to learn at least how to run programs written in that language.

Many computer users do not have the need or the time to become programmers, and I am not suggesting that they do. But, I am convinced that users should know a little bit about programming, for general reasons.

Such familiarity will enable the user to run programs more effectively. For example, many kinds of software use BASIC routines for installation, or for changing the screen or printing attributes. In addition, you will encounter some BASIC programs, especially, those in the public domain, that will not run. Some knowledge of the language will enable the user to make small repairs. Your children will be filled with admiration when you get all those free games to perform correctly.

Every user occasionally feels the need to create his own small utilities or to tailor a mathematical routine. For example, it would be nice to have an easy way to access the special fonts and characters of a printer. A short BASIC routine can do it. As a college teacher, I need a different weighing formula to calculate grade point averages of each class. No generic calculator will do. But with a dozen or so lines of BASIC I can completely automate such calculations.

More important are the insights gained into the real nature of programming and computing. Even a passing acquaintance with BASIC affords a kind of philosophical enlightenment which can be had no other way. Not always easy to express in words, there is an undeniable and striking dimension which curiously is illuminated by acquaintance with the reality of computer language.

Background of the Language

BASIC is the most popular language in the world today. It is spoken in more countries than English and bids fair to become the lingua franca of world computerdom. Some cynics believe the reason for its popularity is because IBM and other manufacturers choose to bundle it with its computers: "If Pascal came with the computer, it would be the popular language." The total volume of users of other languages is trivial compared with it. Others say, the reason for its success is that it is the language easiest for lay persons and beginners to comprehend and use. It is the perfect first language for anyone, and in addition, stands up as a programming medium in its own right.

It is not the most versatile, economical, and powerful language. Experienced programmers consider it slow, awkward, wasteful of space, and lacking in many of the implementations needed by today's processor chips. Yet it is often the first language learned (although Turbo Pascal is moving up fast), and its lessons are transferable to more sophisticated languages later.

The two versions supplied with DOS, are "interpreters," as contrasted with "compilers." An interpreter is a language whose programs are written and preserved in the original form of symbolic statements, known as "source code." In order to be executed, the statements must each time be read and interpreted into computer machine code. This is a burdensome process, requiring continuous shuttle diplomacy between the program, the interpreter, and the CPU. It is slow and takes up a lot of bytes in memory and disk space.

Compilers, on the other hand, take the original program and convert it to computer machine code ahead of time, imbedding along with it the language's running instructions. In the form of compact machine code, the program is saved to disk. The original and lengthy source code can be discarded or filed away for reference. The result is that one can execute the programs without first loading the language. This saves a large amount of disk space and memory. In addition the program code is more compact and efficient, being already in a language the computer itself can understand and thereby running faster and increasing overall economy. The computer does not have to shuttle back and forth translating the program into code as it executes.

Compiling a program reduces its size and increases its speed by factors of 10 to 100. IBM's new VDISK routine, for example, occupies only 3K in compiled form, while the uncompiled version took almost 100K.

There are several compilers available for BASIC, and, if the industry wished, the language could be streamlined and enlarged to do as well what any other language does. That does not seem likely. Compiled BASIC is still not in the same league as some other contenders; and will probably always suffer in the minds of professional programmers from its use as a beginning language.

Very few major programs are now written in BASIC. The most fasionable language at this writing is C, although others are still in the running. There is no tendency to establish a single universal programming language; rather there is a trend toward special-purpose languages.

Converting MBASIC And BASIC86

PC-DOS actually supplies three (upwardly compatible) versions of BASIC. The lowest level, for tape cassette drives, is actually built into the ROM

continued on page 120

pd Precision Data Products
Complete Line of Quality Supplies for Your Computer

TOLL FREE ORDER LINE
800-258-0028

CALL FOR FREE CATALOG

$AVINGS ON DISKETTES!
WE WILL NOT BE UNDERSOLD

DELUXE MFR BRAND BOXED PRODUCTS
Complete with Tyvec envelopes, Labels, Write Protect Tabs and Hub Rings.
100% Certified Error Free! • Manufacturer's Warranty!

Nationally Advertised — Price Per Diskette

	5¼"			3½"		8"		
BRAND	SSDD	DSDD	DSHD	SS	DS	SSSD	SSDD	DSDD
3M	.76	.97	2.23	1.39	1.99	1.51	1.85	2.05
BASF	.78	.80	1.98	1.76	2.26	1.48	1.65	1.89
SONY	.88	1.20	2.55	1.42	2.25	—	—	—

DISCOUNT AT 300 DISKETTES

3M Data Cartridges

Per Cartridge
DC100A $11.80
DC300A $15.80
DC300XL $18.40
DC300XL/P $18.70
DC600A $20.70
DC600HC $23.50
DC615HC $17.20
DC600XTD $22.05
DC615XTD $16.65
DC2000 ..... $16.80
DC1000 ..... $12.45
Quantity less than 10 add 5%.
Shipping $3.00/5 cartridges.

SPECIAL DISCOUNT AT 50 +

SPECIAL
UNBRANDED DISKETTES
100% ERROR FREE — LIFETIME WARRANTY
With Hub Rings, Write Protect Tabs, Tyvec Envelopes, User ID Labels - In Factory/Sealed Poly Packs.
(You Get Everything But The Box — Prices Are Per Disk)

5¼"			3½"	
SSDD	DSDD	DSHD96TPI	SS	DS
.45	.50	1.69	1.39	1.60

SPECIAL OFFER! JUST $3.99 Delivered Price
DATA CASE FOR 5¼" Diskettes HOLDS 60!
(With Order of 100 Diskettes)

PRINTER RIBBONS
QUALITY REPLACEMENTS FOR MOST POPULAR PRINTERS

Apple Imagewriter ..... $3.95 Each
Apple Scribe ..... $2.95 Each
Diablo HyType II M/S ..... $2.99 Each
Epson LX80/90/Homewriter 10 .... $2.95 Each
Epson MX70/80 ..... $2.99 Each
Okidata 80/82/92/93 ..... $1.49 Each
Panasonic KXP-1090/91/92 ..... $5.39 Each
Toshiba 1350 ..... $4.89 Each
(Sold 6/Box; S&H: 25¢, $2.00/Dozen)

Computer Tape
NEW TAPE BACKED BY 3M's UNSURPASSED WARRANTY
Black Watch® Unique substrate durability extends tape life... reduces data loss. Protects itself and your valuable data against physical damage.
777 Series High life, high reliability tape. Tape is completely compatible at all densities, including 6250 BPI. 100% tested.

Product	Black Watch® (700 Series) Per Reel	(777 Series) Per Reel
600' w/seals	$ 7.15	$ 6.85
1200' w/seals	$ 9.45	$ 8.95
2400' w/seals	$12.25	$11.75
3600' w/seals	$17.95	.....
2400' w/EZ II	$12.75	$12.25
3600' w/EZ II	$18.45	.....

10 Reels/Case
Quantities less than 20, add 5% - Shipping F.O.B. Grand Rapids, MI

Minimum order: $25.00. Add 10% for less than 50 diskettes. **Shipping and Handling:** $4.00 per 100 diskettes, Continental U.S.A., APO/FPO, add $8.00 per 100 diskettes. Reduced shipping charge for larger quantities. MI residents add 4% sales tax. Prices subject to change without notice. HOURS: 8:30 AM - 6.00 PM Eastern Time.

pd™ **Precision Data Products**
P.O. Box 8367, Grand Rapids, MI 49518
Customer Service & Information: (616) 452-3457
Toll Free Order Lines: MI 1-800-632-2468
Outside MI 1-800-258-0028
C.O.D.

dFLOW
continued from page 107

simplicity, each will be discussed separately.

New Warranty Standard

Few software reviews ever mention such trivial features of a program as the warranty and license agreement. In this particular case, however, WallSoft's policies are so unique that I feel it is worth mentioning.

Enclosed within the dFLOW package is a postcard which contains their limited warranty and license agreement. In it, it states:

"If dFLOW does not work as advertised, I may return it to you, within a month of purchase, and you will refund my purchase price.

I understand the dFLOW, as any computer program, might not work correctly in all situations. If I do find a bug in dFLOW within the first six months after purchase, you will fix it or I may return dFLOW too and you will refund my purchase price.

I agree that you will have no liability for my use of dFLOW in excess of the refund of my purchase price.

I can make back-up copies of dFLOW for my use only. I will not let anyone else copy or use my dFLOW and I agree to help you protect and defend your rights in dFLOW."

There are two interesting points to note here. First of all, they actually not only guarantee the program works but will fix any bugs you discover within six months or refund your money. Hear that, Lotus?

Secondly, they do not limit the use of the program to a single machine. According to their wordage, which closely resembles Borlands agreement, the owner of dFLOW is permitted to use it on more than a single CPU but cannot let others use his or her program. Many standard agreements differ in that they permit unlimited use of the product but restrict that to a single CPU.

I personally find the WallSoft agreement reasonable and innovative. It's a good example of a software house willing to accept responsibility for their customers satisfaction of their product.

System Requirements

dFLOW does not have stringent hardware requirements; it merely needs an IBM PC/XT/AT or compatible operating under any available version of PC DOS. A printer, while optional, is also recommended. The current version of dFLOW will operate on either monochrome, monochrome graphics or color graphics equipped systems. Finally, dFLOW is compatible with both dBase II as well as dBase III.

Installation

dFLOW is not copy protected, therefor there are no special installation requirements for hard disk users. dFLOW generally requires no installation in order to use it; the only installation routines available would be best described as customization routines. For instance, you can configure dFLOW to operate on a monochrome or color system.

In order to adapt it to your printer, the width of the file output, the number of lines per page, the printer form feed character and the page break character are all definable from the installation program.

Two final features of the installation program allow you to set the default file extension used in your dBase program files (which defaults to .PRG) and set the number of spaces used for indentation. This means that when dFLOW reformats a piece of code, each nested level can consist of 1 or more spaces (I prefer two, but the program comes with a default of 4).

Installation is a one time process that won't have to be repeated as long as your equipment remains the same.

Output

Each of the features which we'll describe shortly provide output. dFLOW allows you to choose where the output goes; your choice may be the screen, the printer or a file. When data is sent to a file, the data is stored in ASII format with the same parameters you set for the printer.

This enables you to interactively work with programs during the debugging stage using the screen and then transfer the final copy to a file or to the printer, greatly reducing the time involved in obtaining numerous program outputs.

Line Numbering

One of the most basic features of dFLOW is its ability to take source code and reprint it with numbered lines of code. The line numbers all appear on the left hand side of the printout and are consecutively numbered beginning with line 1.

This utility is often used in conjunction with other utilities, enabling the programmer to quickly locate points within a large program.

Diagram Program Flow

The Flow Diagram produced by dFLOW (Fig. 1) is among the best I've seen anywhere. The program will automatically provide proper indentation and will graphically depict WHILE,IF and CASE loops by placing letters to the left of the code which indicate with control loop(s) you are currently in. For case statements, a numbered choice is also displayed.

This option defaults to the on position. If you toggle this feature off, you will produce code listings with the proper indentation only. If you take programs that have been used without proper indentation, you can choose the file output and transform the original source code into completely indented code which greatly simplifies recognition and debugging.

Display Control Statements Only

If you only want WHILE and IF (control) statements displayed without any other information, the Control Statements option of dFLOW will produce output with indented code and labeled control statements.

Error Messages Only

Under this option, dFLOW performs a check of the source code for nesting errors. For instance, for every IF statement, dFLOW checks for a corresponding ENDIF. Errors are reported by line number. This is incredibly useful for trying to quickly debug huge volumes of code as the error checking occurs very quickly.

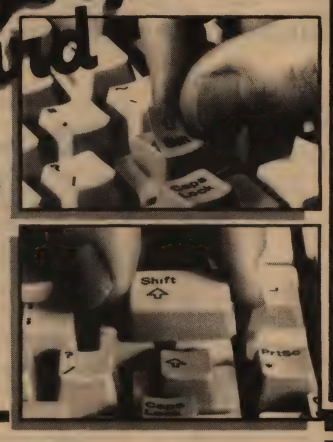
Variable Concordance

One source of headaches for many programmers is to located all instances where a given variable exists. This is usually needed when tracking down the source of uninitialized variables or the point at which a given memory variable is unintentionally reset.

dFLOW permits you to provide complete listings of all variables along with the line numbers they appear on in an individual module or throughout an entire program, depending on the setting of the cross

continued on page 120

Customize Your Keyboard



- Eliminate Confusion
- Reduce Training Time
- Increase Productivity

Need Custom Keytops?
Call us at 602 634-7515

Hooleon CORPORATION
P.O. Box 201, Dept. CS
Cornville, AZ 86325

Touchdown™ KEYTOPS-Kits supporting most software including:

EMULATION
___ PC to 5251 . . . . . $21.95
___ PC to 5520 . . . . . $29.95

WORD PROCESSING
___ DisplayWrite 3 . . . . . $21.95
___ Wordstar $29.95
___ Multimate 3.3 . . . . . $29.95
___ WordPerfect 4.1 . . . . $29.95

MISCELLANEOUS
___ DVORAK/Qwerty . . . $26.95
___ APL Language $29.95
___ Do-It-Yourself Kit . . . $29.95
___ English to French . . . $26.95
___ English to Spanish . . $21.95
___ English to German . . $26.95
___ English to Arabic . . . $26.95

MANY OTHER KITS AVAILABLE!

Touchdown™ KEY EXPANDERS-enlarge small, critical keys (Return, Shift, Backspace, etc.) on the IBM PC and look-alikes to full-size, AT-style keys. Full kit has 12 separate expanders. Mini-Kit: Enter/Ret, both shifts, backspace. All kits support LED where needed.

☐ IBM PC; PC/XT; PC Portable
☐ Compaq; Columbia; Chameleon
☐ Keytronic; Corona; Qubie; ITT
☐ AT&T 6300

___ FULL KIT - $21.95
___ MINI KIT - $10.95

☐ BLACK ☐ GREY

Ask about our other products including:
- Touchdown™ **TEMPLATES**
- KeyStopper™ **KEY LOCK-OUTS**
- FlexShield™ **KEYBOARD PROTECTOR**

☐ Send me FREE INFORMATION

Specify Keyboard Make/Model: _____
Name _____
Address _____
City,St.,Zip _____
☐ VISA ☐ MC # _____ Exp. _____
Visa or MC orders: **602-634-7515** Same Day Shipment • U.S. Postage Paid

DEMON MODEM

1200/300 bps auto-dial/auto-answer modem with Demon Dialing for the IBM PC, XT, AT

$199.

MC, VISA, AMEX Accepted. Free Shipping!

The ZOOM/MODEM PC 1200

- Fully Hayes 1200B compatible
- Demon Dialing! The fastest, easiest way to reach a busy number. Detects busy signal, and immediately redials
- Plug-in upgrade to 2400 bps
- Supports COM 1, 2, 3 and 4
- Monitor speaker
- Free! $275 in database offers including Compuserve, Source, Dow Jones
- Made in USA—2 year warranty

Also available with clock/calendar, electronic mail buffer, and touchtone decoder for security/voice response—Only $249.
PFS:Access Communications Software only $35 with modem purchase ($140 value)

TELSTAR
145 Lincoln Street, Boston, MA 02111
Call Toll Free 1-800-344-3311
In MA 617-423-1237
MC, VISA, AMEX Accepted

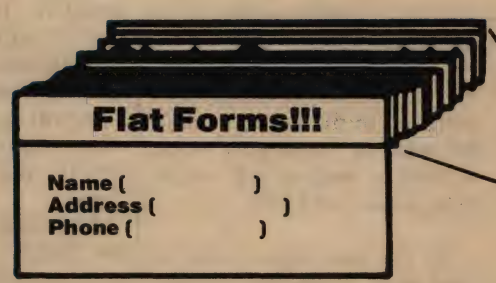
10-day no-questions-asked money-back guarantee

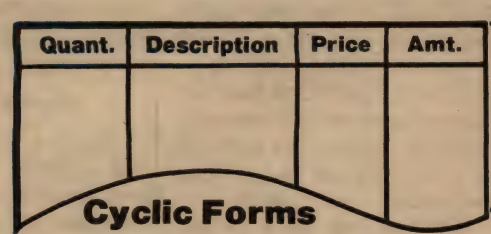
Program with Panache

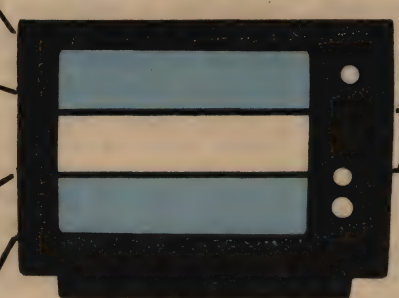
Program generation with power, sophistication, and especially

Style

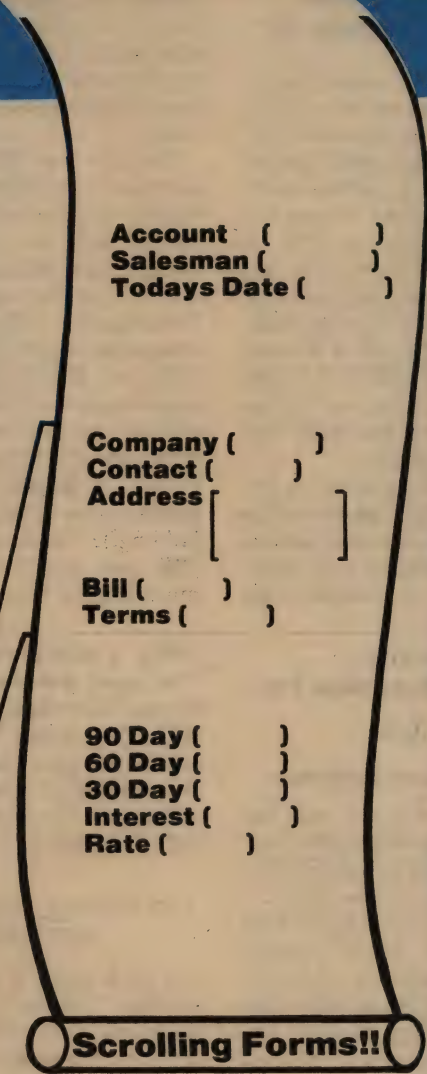
MSDOS, PCDOS IBM PC, XT, AT compatibles.







Free Source Code Included!



Pa·nache (pə näsh′) - with dashing elegance and style

Panache was specifically designed to create form-based application programs. We wanted powerful screen access capabilities and fast file access without sacrificing our customizing capabilities. We wanted to be able to add custom code without having to see the generated programs. We wanted to be able to add custom code and be able to change the screens when the requirements changed. We wanted our cake and to eat it too! We wanted the power, performance and portability of high level programming languages without all the pain, perserverance, and patience. We have found our answer and hope you will too when...you program with Panache.

"It is reasonable to assume that if a single program-generating system were to become popular in the industry, and further, that the program-generating system created source code in a transportable language, for a variety of popular computers, these conditions would define a standard of programming technique unparalleled in the industry today..."

Richard L. Roth, AFIPS Conference 1982

Form Editor:

- **AI Techniques minimize keystrokes.**
- **Automatic multi-dimensional array recognition.**
- **Automatic field naming.**
- **Wordstar compatible editor.**
- **Diagonal cursor movement.**
- **Pop-Up Windows/Menus.**
- **Multi-File Clipboard.**
- **On-Line Help.**
- **Crash Recovery.**

Program Generator:

- **Writes "C" Source Code.**
- **Does not generate reams of case statements or external data files like other similar products.**
- **Generated code is ultra-efficient.**
- **Supports all standard data types and user-defined types.**
- **Custom code independence - Code that you add in-line is isolated from generated code.**
- **Files feature B+Tree index support.**
- **Partitioned screens support scrolling, flat, and cyclic forms, and Pop-Up menus.**

Library Packages:

- **You receive "C" source for all routines.**
- **B+ Tree Manager features:**
  - **Optimized fan-out for each key type.**
  - **Secondary key GETNEXT support.**
  - **User defined ordering for keys.**
- **Open File Cache places no limit on the number of files open at a time.**
- **Disk-Based Garbage Collector handles variable length records and multiple indexes per file.**
- **Window/Menu manager is call-compatible with UNIX curses package.**
- **Generic list processor.**
- **"Just the B-TREE package is worth more than $100".**
- **Additional utilities routines for building your own program generators.**

Order Toll Free
1-800-624-8711

In SC call
1-803-278-3811

Includes Form Editor, Program Generator and Library Packages

ALL FOR

$99.95

TERMS - COD's and company purchase orders accepted. Money Orders and certified checks accepted. Personal and company checks take up to 2 weeks to clear. $4.00 shipping and handling.

Order Toll Free 1-800-624-8711.
In SC 1-803-278-3811.
SC residents add sales tax.

Digifit Inc.

105 Clearwater Rd.
Belvedere, SC 29841

Fitting solutions to digital problems...

BASIC Is Spoken
continued from page 117

chip. It is what comes up on the screen when the PC is booted without a system disk. Intended as the lowest priced configuration, it has been overtaken by events and is now obsolete. However, its 32K of ROM becomes part of the two higher versions which are supplied on the system disk. BASIC.COM is called the disk version, and BASICA.COM (pronounced "Basic-A") is the most advanced and fully implemented version.

BASICA (version 3.0), unlike BASIC, implements the most extensive features, such as advanced graphics and color, with simple command lines within the program, to draw circles, to paint-in shapes, to play music, to display separate windows on the screen, to access subdirectories, and much more.

Because that 32K chunk of software is imprinted on ROM, which is proprietary, IBM's BASIC will not run on PC compatibles, which are forbidden to use the same ROM. Consequently, Microsoft, the company which writes PC-DOS and IBM BASIC, offers stand-alone versions under the generic version of MS-DOS ("MicroSoft" DOS). These are known as BASIC and GW-BASIC (Gee Whiz-Basic, no kidding!), which includes the 32K and are therefore that much bigger, but will run the same BAS files.

There are numerous other dialects of BASIC to confuse the issue, and none of them are exactly alike. They are similar however, and can readily be translated into one another. Almost every computer brand has its own variety. For many years, the closest thing to a universal standard was MBASIC. The "M" stands for Microsoft the company that released the language. Originally written for the Z80 chip and the CP/M system, MBASIC flourished throughout the industry. When the more powerful 8086 and 8088 chips took over a few years ago, the same source files could still be run with an upgraded 16-bit version released by the company, named BASIC86.

Until the last year or so, almost all the BAS programs on public bulletin boards are written in this language, and the interpreters themselves are readily available. However, BASIC86 has no advanced features and is no longer a standard part of bundled software. So it is beginning to fade away, to be replaced by the newer versions.

It is possible to translate such programs into PC BASIC. In some cases, this can be accomplished without the depressing chore of punching anew the lines into a file. To translate from MBASIC, one first is required to reformat the code from CP/M into MS DOS. This can be done with commercial utilities like UNIFORM, or Media Master. After that, the procedure is the same for converting MBASIC or BASIC86 code. This is the process:

Bring up the BAS file with BASIC86. Interrupt execution by hitting Control-Break. Save with the ASCII instruction. It looks like this:

OK
save"b:filename.bas",A

The last "A" tells the program to write the source file, not in the special notation of the interpreter (which varies with different versions of BASIC), but in ordinary ASCII characters, which all versions can read.

Next exit back to SYSTEM, and load the PC BASIC or BASICA. Invoke the source file. It will run. When you have tested it, save it back to disk without the "A" switch. This will re-write the code in more compact notation than ASCII and thus save disk space.

For other versions, like Apple BASIC, it is somewhat more complicated. One must note the differences in syntax and revise the source code to agree with the version you want to use.

How To Execute

Running a BAS program is not difficult. It can be done two ways, directly from DOS or from within BASIC. The main difference is the use of a quotation mark when operating within BASIC. Let us assume we have a source file called ADVENTUR.BAS which is written in BASICA. Once the computer is booted, it displays an A> prompt and a blinking cursor. We need to place in A drive the disk containing BASICA.COM. If ADVENTUR.BAS is on the

continued on page 122

dFLOW
continued from page 118

reference modoule.

Module Cross Reference

This option is not only my favorite but probably the best reason to invest in the dFLOW program. When this option is chosen, a complete flow chart consisting of blocks named after each program module is displayed on the screen. You are able to page through the screen and even send the output to a printer.

If you are trying to debug large, unfamiliar programs, this capability alone makes the dFLOW program worthwhile. Using the charts produced from the program, you can clearly show all of the programs relationships to one another in a graphic manner. You are able to turn off the graphic representation and send the cross-reference information out to a file in readable form if you desire to do so.

Batch Capability

dFLOW is run most easily under a menu environment. You may, however, elect to bypass the menus and run dFLOW using command line/batch commands. Under this method of operation, you call up the the program in the following manner:

DFLOW FILENAME.EXT OPTIONS

This is useful if you want to produce different types of documentation over different areas of your program. A batch file can be created which would enable you to produce dozens of individual reports with a single command.

Search Program

The last version of dFLOW included a free utility program called SEARCH. It is designed to search up to 500 files looking for up to 20 text strings. SEARCH can be told to report the number of sightings reported or may be told to substitute existing strings with different replacement strings.

At the end of every run, SEARCH displays the file name, the line number the string was located on followed by the entire line of text. At the conclusion, a summary providing each file name and the number of strings found to match are listed out.

This program seems to be ideally suited to those situations where an upgrade to the program requires substantial repeated syntax modification. It is, however, very flexible and has usefulness beyond the dBase environment.

Conclusion

They say that necessity is the mother of invention. WallSoft's dBase programming needs were met by dFLOW and I'm sure many of yours would be as well. There are, however, other dBase utility programs available on the market; the first one that comes to mind is dBest. What makes dFLOW so useful, and somewhat unique, is its flowcharting capability.

Other dBase utility programs do offer additional features not found in dFLOW such as file compression, where all extra spaces are removed, all keywords are reduced to their four letter abbreviations, etc. If you are professionally involved in dBase, you would be wise to investigate other utilites as well which would compliment dFLOW.

By the time this review is published, WallSoft will probably have released version 4.00 of dFLOW; it was under alpha testing at the time I was reviewing version 3.16. Version 4.0 is expected to have additional features not currently found in version 3.xx and will be priced slightly higher than the current cost of $129.

Whether you are a professional dBase applications programmer or simply produce an occational routine for your business, dFLOW is a valuable tool to have in your repertoire of programs and I highly recommend to all dBase programmers.

For additional information, contact:
WallSoft Systems, Inc., 233 Broadway, New York, N.Y. 10279, (212) 406-7026, (800) 233-3569 ●

NEW PRICES

DATA-LITE SYSTEMS

NEW PRICES

DL-XT
4.77 MHZ

640K MOTHERBOARD
21 MEG HARD DRIVE
640K RAM INSTALLED
FLOPPY DISK DRIVE
HARD DRIVE CONTROLLER
FLOPPY DISK CONTROLLER
SERIAL PORT GAME PORT
PARALLEL PORT
CALENDAR CLOCK
135 W POWER SUPPLY
'AT' STYLE KEYBOARD

$969.95

DL-XT TURBO
4.77 - 8.00 MHZ

640K MOTHERBOARD
21 MEG HARD DRIVE
640K RAM INSTALLED
FLOPPY DISK DRIVE
HARD DRIVE CONTROLLER
FLOPPY DISK CONTROLLER
SERIAL PORT GAME PORT
PARALLEL PORT
CALENDAR CLOCK
135 W POWER SUPPLY
'AT' STYLE KEYBOARD

$999.95

DL-AT TURBO
8.00 MHZ

2 MEG MOTHERBOARD
21 MEG HARD DRIVE
512K RAM INSTALLED
1.2 MEG FLOPPY DRIVE
HARD DRIVE CONTROLLER
FLOPPY DISK CONTROLLER
SERIAL PORT
PARALLEL PORT
CALENDAR CLOCK
200 W POWER SUPPLY
'AT' STYLE KEYBOARD

$1859.95

10 MHZ AT COMPATABLE $2374.95
640K 4 LAYER TURBO $1099.95
1MEG 4 LAYER TURBO $1134.95

EGA SUBSYSTEM
$689.95

SCRATCH & DENT SALE
SPECIAL PRICES
CALL FOR DETAILS

21 MEG HD DRIVE KIT (55ms) $410.00
21 MEG HD DRIVE KIT (65ms) $390.00
31 MEG HD DRIVE KIT (65ms) $540.00
all kits include cables & controller for XT
FLOPPY DRIVE (JAPANESE) ..... $ 85.00

20 MEG AT DRIVE ..... $ 520.00
30 MEG AT DRIVE ..... $ 615.00
72 MEG AT DRIVE $1295.00
★★★ CALL FOR OTHER DRIVES ★★★
XT/AT TAPE BACKUP ..... CALL

20 MEG HARD CARD $450.00
EGA MONITOR/CARD SUBSYSTEM $689.00
MONOGRAPHIC PRINTER CARD (w/system) ..... $ 70.00
COLOR GRAPHIC PRINTER CARD (w/system) ..... $ 75.00
300/1200 MODEM (INT OR EXT) $145.00

QUANTITY DISCOUNTS AVAILABLE
CALL FOR BEST PRICING
OTHER ITEMS & CONFIGURATIONS AVAILABLE

805-527-6465
★★★ DEALERS WELCOME ★★★

PO BOX 1350
SIMI VALLEY, CA 93062

If a competitor's price on 256K RAM is lower than ours, please bear in mind that we are selling high quality parts, and primarily Japanese brands which do cost us more.

ICs PROMPT DELIVERY!!!

SAME DAY SHIPPING (USUALLY)
QUANTITY ONE PRICES SHOWN for AUGUST 24, 1986

OUTSIDE OKLAHOMA: NO SALES TAX

640 Kbyte MOTHERBOARD KITS: Zenith 150: $77.74
IBM PC XT, Compaq Portable & Plus: hp Vectra

DYNAMIC RAM			
1Mbit	1000Kx1	100 ns	**$69.50**
4464	64Kx4	150 ns	**4.20**
41256	256Kx1	100 ns	**5.10**
41256	256Kx1	120 ns	**3.10**
41256	256Kx1	150 ns	**2.93**
41128	128Kx1	150 ns	**4.99**
4164	64Kx1	150 ns	**1.45**
EPROM			
27512	64Kx8	250 ns	**$24.00**
27C256	32Kx8	250 ns	**7.00**
27256	32Kx8	250 ns	**5.46**
27128	16Kx8	250 ns	**4.15**
27C64	8Kx8	200 ns	**5.15**
2764	8Kx8	250 ns	**3.75**
STATIC RAM			
43256L-12	32Kx8	120 ns	**$33.00**
6264LP-15	8Kx8	150 ns	**3.10**

V20 8Mhz $12.00
V30 8Mhz $14.00
8087 5 Mhz $132.00
80287-8 8Mhz $355.00

OPEN 6½ DAYS 7AM-9PM: SHIP VIA FED-EX ON SAT.

SUNDAYS & HOLIDAYS: SHIPMENT OR DELIVERY, VIA U.S. EXPRESS MAIL

SAT DELIVERY INCLUDED ON FED-EX ORDERS RECEIVED BY:
Th: Std Air $6/4 lbs
Fr: P-One $13/2 lbs

MasterCard/VISA or UPS CASH COD
Factory New, Prime Parts µP∞
MICROPROCESSORS UNLIMITED, INC.
24,000 S. Peoria Ave.,
BEGGS, OK. 74421
(918) 267-4961

Please call for current prices because prices are subject to change. Shipping & insurance extra. Cash discount prices shown. Orders received by 9 PM CST can usually be delivered to you **the next morning, via Federal Express Standard Air @ $6.00, or Priority One @ $13.00!**

We believe we do everything better than our competitors.*

We sincerely appreciate your business.

*Well, almost everything.

BASIC Is Spoken
continued from page 120

same disk, we type in:

A>basica adventur

(If the file ADVENTUR.BAS is on another disk, we place that disk in B drive and add to the command a B: in front of the file name.) When we hit the enter key, the language interpreter will load first and give us back some information, such as copyright and buffer size (about 62K); then it will proceed to load and run the program. When that happens the action on the screen will be controlled by the program commands and BASIC, not by DOS. To interrupt the runtime, we can press Control-Break. This will echo to the screen the "Ok" prompt which is internal to BASIC. It signifies that the program is still loaded and that we are still in BASIC.

To run a file from within the language, we first load only the interpreter at the DOS prompt:

A>basica

This will give us the proprietary information and the Ok prompt, but nothing will happen. To start a program we type on the line under the prompt:

Ok

run"adventur

If the file is on the same disk, the program will load and run when we strike the enter key. If the file be on another disk, we can remove the A disk and insert the one containing ADVENTUR.BAS in its place. Or we can put the file disk in B drive. In that case, the command will insert a B: between the " and the file name.

Whether we start either way, once we are in the BASIC environment, DOS commands will not work. After a Ok prompt, we must use BASIC commands. After an Ok prompt, the command is followed by a quotation mark placed just before the name of the source file. Some of the main commands (upper or lower case does not matter) one might use to run programs are:

RUN will load and run or rerun a program from the beginning; when followed by quotation marks and the name of another BAS file, this command will load and run the new file;

FILES will provide a directory of the disk in the drive you started with; if you wish a directory of another drive, place a quotation mark after the command, followed by the drive letter, a colon, asterisk, period, asterisk, like this—FILES"b:*.*;

LOAD will change the program on deck but will not run it;

LIST will echo on the screen, in ordinary ASCII characters (the standard alphabet), the actual source code of the program;

LLIST if the printer is on, will print out the same listing on paper; numbers, separated with a -, after this command will limit the listing to the lines indicated;

EDIT followed by a line number will pull a single line out of the program to be examined and edited.

SAVE will save whatever code is loaded, with any revisions that have been made to it; to rename the file, so as to keep both versions, place a quotation sign after the command, the drive where it will be written, and the new name; to save the code in ASCII characters, the command must include a closing quotation mark, a comma, and end with the letter "A"

NEW clears the buffer of the last program, so you can load another;

Once a program is running, the Control-Break keys pressed simultaneously will interrupt the program, and return an Ok;

SYSTEM will cause the screen to exit BASIC and return to DOS.

Note that BASICA is a full screen editor; that is, one can move the cursor in any direction of a program listing and make revisions. The most frequently-used commands have been assigned on the PC to the 10 function keys, a menu of which is displayed across the bottom of the display for ready reference.

The reason one might load BASIC first, without indicating from DOS the program to be run, is to free up the A drive for a disk containing the source code; or when one is about to write, rather than run, a program. Then the slight difference in command syntax must be observed.

When attempting to run a BAS program, one might get a common error message "file not found," usually indicating the line of the error. With a bit of knowledge this can be easily remedied. Use the EDIT or LIST command to view the offending line. Note, in the line, the name of the file which appeared to be missing and the default drive it was supposed to be on. Now look for that file, either loading it to the same disk or putting it in the drive where the program thinks it is. Now the program should run.

Writing Some Simple Programs

Once BASIC or BASICA has been loaded, one can begin to write programs. If this is done without line numbers, the statements will immediately execute and will not be stored in a buffer. For example, as a quick calculator, one can enter:

Ok

a = (15*25)/1.002

print a

This simple routine will immediately return the value of A. Let us explore the notation. The first line creates the unknown A whose value is defined in terms of a mathematical operation of known values. The parentheses tell the CPU to do this multiplication first, then divide by 1.002. The second line tells the computer to print the result on the screen. If LPRINT had been used, the result would instead be sent to an external printer.

Another example:

Ok

a$ = "Home Telephone: (607) 777-2253"

print a$

The dollar sign after the variable symbol indicates a "string," rather than a number, that is, letters, signs, or numbers that do not involve mathematical calculations. These are often called alphanumeric characters. Because of the absence of line numbers, either program will execute and evaporate from the face of the earth.

To give a program more permanent form, one must number the lines. Then the sequence of lines will be stored in a buffer, can be run over and over again, can be listed, edited, and saved to disk. The numbers assigned to the lines are arbitrary, but BASIC will arrange them, and run them, in numerical order. It is a good idea to start with lines numbered at intervals of 10 (10, 20, 30, etc.). This allows in between numbers for future changes and additions that

continued on page 123

STOP HACKING AND START WINNING!

Dog and Pony Programs from Software Exchange

Thoroughbred and Harness Racing Analysis Package • Handicap thoroughbred and harness races in 5 minutes • simple and quick • two programs . . . **$29.95**

Enhanced Thoroughbred and Harness Racing Analysis • Handicap any race in 10 minutes with this enhanced analysis • two programs . . . **$49.95**

Greyhound Racing Analysis Package • Handicap any race in 5 minutes • simple and quick . . . **$29.95**

Enhanced Greyhound Racing Analysis Package • Handicap any race in 10 minutes with this enhanced program . . . **$49.95**

Up to 12 past performance data entries analyzed: track lengths, speed ratings, times, odds, post positions, positions at stretch, and finish positions. With complete instructions.

TO ORDER: Specify disk or cassette, program(s), and computer type: Apple II+, IIc, IIe, Atari, IBM PC and compatibles, Commodore 64/128 and VIC-20, TI-99/4A, TRS-80 Model III/4, Color Computer, and Model 100/200. Include check or money order plus $2 for postage and handling. C.O.D.s accepted.

Write to:
Software Exchange®
P.O. Box 5382-C
W. Bloomfield, MI 48033
PHONE: (313) 626-7208

Attention Independent VARS & VADS

GET AT LEAST **30% OFF**

IBM
Compaq
HEWLETT PACKARD
corona data systems, inc.
AT&T

PLUS: We offer peripherals up to 50% OFF.
PLUS: We require NO MINIMUM PURCHASES.
PLUS: We have consistent product availability.
PLUS: We handle ALL warranty claims directly.
PLUS: We provide FREE technical support.
PLUS: You can call us TOLL FREE.

For more information on how you can get the BIGGEST DISCOUNTS on the hardware you want, ***call now, 800-626-AVAR.***

AVAR
CORPORATION

4015 Pines Industrial Ave. • P.O. Box 557 • Rockledge, FL 32955 • 305-636-6802

COMPUTER ASSEMBLY MANUALS

by Raymond Kosmic

"BIG BLUE SEED" for IBM™ BUILDERS
"APPLE SEED" for APPLE™ BUILDERS

THE BIG BLUE SEED: Describes how to assemble **SIXTY-FIVE** IBM-compatible motherboards & peripheral cards; with parts list, component layout diagram, & instructions to get those bare boards up & running. With guides for the latest 640K MthBds. Super reference for all IBM enthusiasts! **$14.95**

APPLE SEED I - MOTHERBOARD ASSEMBLY MANUAL: Introductory, self-directing guide to assembling the 6502 motherboard; with parts list & component layout for both II+ and IIe. Ideal for the first-time builder **$9.95**

APPLE SEED II - PERIPHERAL CARD ASSEMBLY MANUAL: In the style of the **BIG BLUE SEED**. Instructions for assembling **EIGHTY** bare Apple-compatible cards. With guides for II+ & IIe MthBds. For ALL Apple hobbyists! **$12.95**

Order the latest versions direct from the publisher
Buy two or more manuals and deduct 10%
Over FORTY Apple & IBM bare cards in stock.

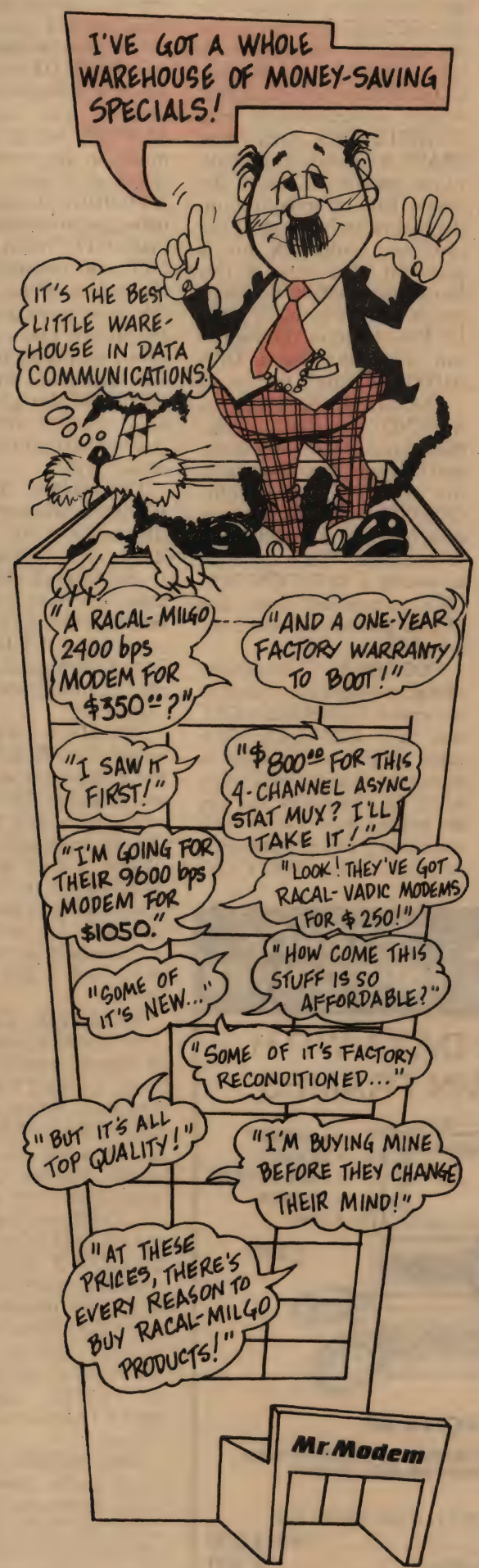
Send cheque/money-order (US funds) to:

NuScope Associates

IN U.S.A.
P.O. Box 790
Lewiston, NY
USA, 14092

IN CANADA
P.O. Box 742, Stn B,
Willowdale, Ont.
Canada, M2K 2R1

INTRODUCING Mr. Modem™ and his Discount Data Communications Warehouse.



Check out these super deals!

Racal-Milgo® Modems

- **24 LSI MKII . . . . . $250 each**
  2400 bps synchronous point-to-point or multipoint unconditioned leased lines.
- **24 LSI MKII Dial . . . . . $250 each**
  2400 bps Bell 201 B/C compatible, half duplex synchronous FCC Registered for direct connect to dial networks.

Racal-Vadic Dial Modems

All of the following Racal-Vadic Dial Modems are FCC Registered for direct connect to dial networks.

- **VA 3451 PA . . . . . $200 each**
  Auto-dial/auto-answer Bell 103/212 compatible.
- **VA 355 PX . . . . . $50 each**
  0-300 bps full duplex asynchronous Bell 103/113 compatible, manual originate/answer.
- **VA 1250 PX . . . . . $150 each**
  0-1200 half duplex asynchronous Bell 202 compatible, manual originate/answer.
- **VA 3467 . . . . . $125 each**
  0-300 bps full duplex asynchronous, 1200 bps asynchronous/synchronous Bell 103/212A compatible central site card modem, answer only.
- **VA 1601 Chassis . . . . . $150 each**
  Desk top chassis that houses 1 or 2 single card modems.
- **VA 1680 Chassis . . . . . $300 each***
  Rack mount chassis, houses up to 16 single card central site modems.
  ***VA 1680** with a Single Power Supply is **$300 each;**
  ***VA 1680** with a Dual Power Supply is **$400 each**

FREE CATALOG

Seeing is believing. Ask for your free catalog today. Everything is available for immediate delivery.

Call 1 (800) 772-2555.
(In Florida, call (305) 476-5555.)

Mr. Modem™ features Racal-Milgo and Racal-Vadic data communication products at factory reconditioned prices. Full one-year factory warranty from date of invoice. All products are available for immediate delivery. Quantities are limited. Don't wait...stock up now for substantial savings.

Mr. Modem™ "QUALITY MODEMS AND MORE...FOR LESS"

©1986 Racal-Milgo

dBASE III CONFIG.DB

by Ron Richardson

dBASE III has a very powerful method to configure the program to start with the default values you want, using a CONFIG.DB file. However, the dBASE manual does a very poor job of explaining how to set up a CONFIG.DB file, giving it only two pages of an appendix. dBASE treats the CONFIG.DB file just like DOS treats CONFIG.SYS. It reads it once as the program starts (it MUST be in the same subdirectory and dBASE) and then configures many of its options based on the content of the file. The main purpose of the CONFIG.DB is to change the default SETting of dBASE. For example BELL = OFF would cause the default to be the same as issuing a SET BELL OFF from the dBASE prompt. Similarly, TALK = OFF would cause the default to be same as a SET TALK OFF from the dBASE prompt.

The defaults that can be changed are:

ALTERNATE: Changes the default filename for SET ALTERNATE ON. The ALTERNATE file is the file dBASE uses to store all text that is written to the screen between a SET ALTERNATE ON and a SET ALTERNATE OFF. The syntax is ALTERNATE = <filename>. If no file extension is given, .TXT is used.

BELL: Normally the bell rings when you type data past the end of a field in EDIT or APPEND mode. BELL = OFF would prevent. This is the same as issuing a SET BELL OFF command from the dBASE prompt or in a command file.

BUCKET: This command is only available from the CONFIG.DB file. It controls how much memory is allocated for the PICTURE and RANGE commands of @..,..GET commands. The default is 2*1024 bytes (2K). So BUCKET = 3 would change it to 3072 bytes (3K). The default value is large enough for all but the most complex data entry screens.

CARRY: Normally, when you are adding data to a data base (using a program file or APPEND) each record starts off blank. CARRY = ON causes each record to start off with the value of the prior records. This is useful when the values of several of the fields do not change often. This is the same as issuing a SET CARRY ON command from the dBASE prompt or in a command file.

COLOR: This command is used to set the colors for a color system or the screen attributes for a monochrome system. The format is COLOR = <standard>, <enhanced>, <border>. The standard and enhanced displays each require two colors, one for the text and one for the background. The two colors are separated with a slash. The standard colors are the normal display and the enhanced colors are the ones used when you issue a SET INTENSITY ON command. The colors can be entered using either numbers or letter abbreviations. The colors, abbreviations and numbers are Black, Space, 0; Blue, B, 1; Green, G, 2; Cyan, BG, 3; Red, R, 4; Magenta, BR, 5; Brown, GR, 6; and White, W, 7. So the command COLOR = B/W,R/W,BR (in CONFIG.DB); COLOR = 1/7, 4/7,5 (in CONFIG.DB) and SET COLOR TO 1/7,4/7,5 (from program or dBASE prompt) are all the same.

COMMAND: A dBASE command that will be executed automatically each time dBASE is started. This allows you to store one command in the CONFIG.DB file to be automatically executed each time dBASE is started. COMMAND = DO STARTUP would automatically run STARTUP.PRG each time dBASE is loaded. This could run a program to check the system date and update files on the first of each month or the program could ask for a password. The uses of this feature are limitless. By chaining commands in the STARTUP.PRG program, this feature can work just like a DOS AUTOEXEC.BAT file.

CONFIRM: Normally in APPEND and EDIT mode, dBASE moves the cursor to the next field each time you type to the end of the field. CONFIRM = ON forces you to press return to get past the end of each field. This is the same as issuing a SET CONFIRM OFF command from the dBASE prompt or in a command file.

CONSOLE: Normally dBASE messages are printed on the screen. CONSOLE = OFF and SET CONSOLE OFF cause dBASE not to write to the screen. This is useful when ALTERNATE is ON and you are writing data to a file with a series of ? and ?? statements or when using WAIT TO memory_variable to make a menu selection. You first display a screen or menu, then turn the console off. You can then use SET ALTERNATE ON to print the data to a file or a WAIT TO to get a menu selection without cluttering the screen. The console is ALWAYS on in interactive mode, so this command only effects programs.

DEBUG: This is a program debugging statement. It is normally OFF. When DEBUG is OFF, error messages are sent to the screen. When DEBUG is ON, error messages are sent to the printer. This allows you to debug your programs without writing over screens and menus. It also gives a hard copy record of error messages without having to do a series of screen prints.

DECIMALS: This controls the default number of decimals displayed from numeric displays. DECIMALS = 3 would cause dBASE to display three decimal places. The default is two. This is the same as issuing a SET DECIMALS TO 3 command from the dBASE prompt or in a command file.

DEFAULT: DEFAULT = B would cause dBASE to look on the B drive for all programs and data files. This is the same as issuing a SET DEFAULT TO B command from the dBASE prompt or in a command file. Note that no colon is required after the drive. This command has no impact on statements that include the drive, such as DO C:STARTUP.

DELETED: This controls whether dBASE commands use or ignore records that have been DELETEd but not PACKed. When a record is DELETEd in dBASE, a flag is set to mark the record as erased, but the record is not removed from the data file until a PACK command is given. DELETED = ON (or SET DELETED ON from the dBASE prompt) causes most dBASE commands, like LIST or LOCATE, to overlook the deleted records. INDEX, DISPLAY #, GO #, GOTO # or NEXT ignore the DELETED status and use all records.

DELIMITERS: dBASE normally displays fields for @ ..,.. GETs in inverse video. When DELIMITERS is set ON (DELIMITERS = ON), dBASE places a colon on each side of the inverse video. This is useful when inverse video has been turned off (INVERSE = OFF or SET INVERSE OFF). The

continued on page 128

COLOR PRINTER RIBBONS
800-438-7745
You Don't Have to Pay Their Prices!
Immediate Shipment New Cartridges (not reloads) COLORS Available
Guaranteed first quality.

	PRICE EACH IN QUANTITY OF 3	6	12
C. Itoh Prowriter Nylon Black	$5.25	$3.65	$3.35
NEC 8023A, Apple DMP, Apple Imagewriter 1	5.25	3.65	3.35
COLOR	6.85	5.95	5.00
Brother HR 15 M/S Black	18.15	7.15	6.00
Diablo Hytype II Nylon Black	5.45	4.70	4.00
COLOR	7.10	6.15	5.20
Diablo Hytype II M/S Black	4.90	4.25	3.60
COLOR (Brown or Blue Only)	5.85	5.10	4.40
Epson MX/FX/RX 70/80 Nylon Black	5.00	3.65	3.35
COLOR	6.85	5.95	5.00
Epson MX/FX/RX 100 Cartridge Nylon Black	6.50	4.50	4.25
COLOR	10.50	9.25	8.00
Epson LX 80 Nylon Black	5.80	5.00	4.25
COLOR	7.55	6.55	5.50
IBM Proprinter Nylon Black	7.75	6.70	5.70
COLOR	8.85	7.70	6.50
NEC 2000/3500 Nylon Black	5.45	4.75	4.00
COLOR	6.60	5.70	4.85
Okidata 80/82/92 (Spools) Nylon Black	2.25	1.95	1.65
COLOR	3.35	2.90	2.45
Okidata 182/192/193 Nylon Black	8.80	7.60	6.45
COLOR	9.90	8.60	7.25
Panasonic KX-P 1090 Nylon Black	11.50	10.00	8.50
Ricoh 1200, 1300, 1600, M/S Black	5.50	4.75	4.00
COLOR (Brown or Blue Only)	6.60	5.70	4.80
Qume IV M/S Black	5.70	4.95	4.00
Tally Spirit 80 M/S Black	8.00	6.95	5.90
Texas Instrument TI 850/855 Nylon Black	6.80	5.90	5.00
Toshiba P 1350, Matrix, Nylon Black	5.70	5.00	4.20
COLOR	6.85	5.95	5.00

"COLORS" available are RED, BLUE, GREEN, BROWN, PURPLE and YELLOW
Feel free to mix them up.
We have ribbons for most printers. Call for prices and availability.
Prices include delivery (UP ground) in Continental U.S.
Checks & Money Orders accepted (no delay)
VISA/MC add $1.00 per order
COD add $2.00 per order
(Georgia residents add 4% sales tax.)
PRINTER RIBBON SUPPLY
P.O. Box 920145 • Norcross, Georgia 30092
Outside Georgia Phone 800-438-7745
Inside Georgia 404-446-1547

IBM-PC 9 TRACK TAPE DRIVES
EXCHANGE DATA WITH MINIS & MAIN FRAMES
• DATA COLLECTION
• DATA REDUCTION
• MAILING LISTS
• GOV'T TAPES
• DISK BACKUP
• LANDSAT
• SEASAT
• REAL ESTATE
• CENSUS
• FAA
CAD
CAM
IBM-PC/XT/AT
EXPAND YOUR IBM-PC TO READ/WRITE 9-TRACK MAG TAPES IN STANDARD ANSI-IBM 800 BPI (NRZI) FORMAT
• 800 BPI NRZI DRIVES WITH CONTROLLER AND SOFTWARE ..... From $1200
• Controller and Software Alone ..... $ 900
Request Full Brochure
ELECTROVALUE INDUSTRIAL INC.
P.O. BOX 376-CBS
MORRIS PLAINS, NJ 07950
201/267-1117

IBM®-PC USERS

Double your Disk Drive Capacity

720K Formatted
DS/DD 80 TRACK

Compatible with all IBM software PC DOS (2.0 or Higher)
Allows you to read IBM Formatt Diskettes
Requires (1) 40 Track DS/DD Drive
Package Includes: 1 SA460 DS/DD 96TPI Drive, Device Driver and Installation Instructions

$79.00 EA. FACTORY "NEW"

Device Driver Sold Separately for $30.00

SEAGATE ST506

5 MEG Hard Disk for your IBM-PC

5 MEGS For the price of a 360k floppy

$89.00 EA. "NEW"

ASTEC 65 WATT SWITCH

OUTPUTS

+ 5 @ 6.0A
+ 12 @ 1.5A
+ 12 @ 2.1A
− 12 @ .25A
DC

DIMENSIONS: Length 8.0", Width 4.4", Height 2.4"

$39.00 EA. "NEW"

DTC 5150-CX Hard Disk Controller $109.00 EA.

WHILE THEY LAST

45 MEG TAPE
BACK-UP

For IBM-PC/XT/AT and Compatibles
Includes: Controller, Cables, Software, Manual and Mounting Hardware

$399.00 EA. FACTORY "NEW"

TO ORDER
Please Send Cashier's or Certified Checks Only
Add $3.00 Shipping Per Item
Master and Visa Accepted
California Residents add 6% Sales Tax
Canadian Residents Add $10.00 Shipping
Exchanges Only / No Cash Refunds

Send To : WESTERN SYSTEMS
950 N. ELM ST.
ORANGE, CA 92667
(714) 538-4323

dBASE III
continued from page 126

delimiters can be changed from colons to any pair of characters with SET DELIMITERS TO '[]' where [] are any two characters. If only one character is used, it is placed on both sides of the field. Contrary to what the manual says, DELIMITERS = '[]' does not work when placed in the CONFIG.DB file.

DEVICE: This controls whether the @ ..,.. SAYs go to the screen (default) or to the printer. The syntax is DEVICE = screen/printer. This is the same as issuing a SET DEVICE TO command from the dBASE prompt or in a command file.

ECHO: This is a debugging tool. The default is OFF. When ECHO is ON (ECHO = ON in CONFIG.DB file or SET ECHO ON from the dBASE prompt or in a command file) program commands are printed on either the screen or the printer depending on how DEBUG is set.

ESCAPE: Normally ESCAPE is ON. That means that pressing escape causes a LISTing or a program to stop. dBASE then asks you Abort, Suspend or Resume. Setting ESCAPE OFF (ESCAPE = OFF in CONFIG.DB file or SET ESCAPE OFF from the dBASE prompt or in a command file) causes escape to have no impact. This should be used with extreme care. With ESCAPE OFF, the only way to stop a "run away" program may be to reboot and this can cause data files to be damaged or lost.

EXACT: EXACT controls how character strings are compared. When EXACT is OFF, the character string 'ABCDEFG' is equal to the string 'ABC' but the string 'ABC' is *not* equal to 'ABCDEFG'. When comparing two strings ('ABCDEF' = 'ABC') dBASE only compares to the length of the string on the right. With EXACT ON, the strings must match exactly. The default is OFF. This can be changed to on with EXACT = ON in the CONFIG.DB file or SET EXACT ON from the dBASE prompt or in a program. Since the way dBASE compares strings is unusual, I turn EXACT ON to get a more intuitive comparison.

FUNCTION KEYS: All of the function keys except F1 can be changed from their default values. The correct syntax is F# = 'new command'. The # is replaced with the number of the function key (2-10) to be changed. Several commands can be chained together. They must be separated with a colon. If a return is needed at the end of the command, it must conclude with a semicolon. (F2 = 'USE DATABASE: BROW;') The colon and semicolon are the same as including a return in the definition. The only limit is that each function key may be assigned at most 30 characters including spaces and returns. (If you have trouble fitting the commands you want to use into 30 characters, remember that dBASE only needs the first four letters of keywords.) Function keys (except F1) can also be changed at the dBASE prompt or within a program with SET F# TO 'new command.'

GETS: GETS = # controls how many @ ..,.. GETS may be active at any one time, or how many different fields you can move the cursor between. The default is 128 and # can be between 35 and 1023. The default is enough for all but the most complex screens. Reducing the number will save a few bytes for small memory systems.

HEADINGS: This controls if headings are printed at the top of a report. The default is ON. It can be changed with HEADINGS = OFF in the CONFIG.DB file or with SET HEADINGS OFF from the dBASE prompt or in a program.

HELP: This controls if you get the message 'Do you want some help? (Y/N)' when you enter a command dBASE does not understand. The default is ON. It can be changed with HELP = OFF in the CONFIG.DB file or with SET HELP OFF from the dBASE prompt or in a program.

INTENSITY: The controls whether APPEND and EDIT display fields in inverse video. The default is ON. It can be changed with INTENSITY = OFF in the CONFIG.DB file or with SET INTENSITY OFF from the dBASE prompt or in a program.

MARGIN: This controls the left margin of the printer. The default is zero. It can be changed with MARGIN = # in the CONFIG.DB file or with SET MARGIN TO # from the dBASE prompt or in a program. This is useful if you plan to punch holes in the paper to store it in a binder. Without a larger left margin, you will punch holes in the printout.

MAXMEM: This controls the amount of memory dBASE retains when you use the RUN or ! functions to run other programs from within dBASE. The default value is 256K. This can be changed to 200K to

continued on page 130

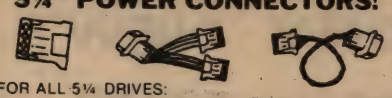
WE'VE MOVED!

ARNOLD COMPANY

WE'VE MOVED!

NEW PHONE: 214-395-2922 FOR SUPER FAST SERVICE!

5¼" POWER CONNECTORS!



FOR ALL 5¼ DRIVES:

1	10	50	100
$1.00 ea.	$ .95 ea.	$ .89 ea.	$ .79 ea.

5¼ DRIVE POWER CABLES

5¼ Power Connector on 2 ft. cable **$1.75**
EXTENSION 5¼ Power Cable. 2 ft. with Male on one end, Female on other **$2.99**

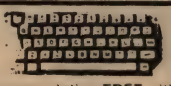
"Y" KIT ADAPTS YOUR SINGLE DRIVE P.S. FOR 2 HALF-HEIGHTS. Includes 2 male connectors, 1 female connector and wire.

1	10	25	50
$3.75 ea.	$3.50 ea.	$3.35 ea.	$3.10 ea.

8" DRIVE POWER CONNECTOR SETS: Set of 2. Specify your drive.

1	10	25	50
$2.75 ea.	$2.50 ea.	$2.25 ea.	$2.00 ea.

TI99/4A KEYBOARDS!



UPGRADE your *Timex/Sinclair*. We provide detailed documentation FREE with your keyboard! Get these while the supply last. New, includes documentation **$5.99**

NUMERIC KEYPAD

Unencoded keypads feature each key terminated in its own switch. High quality **NEW keypads** have a **great feel!** Also has =, +,., –, space, enter and comma keys - *don't delay!* . **$5.95**

COMMODORE SERIAL CABLE
6 ft. with DB-25 Female on one end to User Port Connector ..... **$5 each...10 for $45**

33% IBM PC SPEEDUP

NEC V-20 CPU directly replaces 8088 CPU in IBM PC/XT and compatibles. 100% Compatible. Simple Plug-in replacement **$19.95**

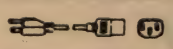
FLOPPY DRIVE CASE

New greay 2 piece horizontal case for ½ or ⅓ ht drives includes spacer for half ht ..... **$8.95** or **2 for $16**

VIDEO TERMINAL

Used TI VDT-11 Terminals. Clean, and working. Includes Terminal and Keyboard. Limited Qty ... While they last! **$99**

COMPUTER AC CORDS



INDUSTRY STANDARD AC CORD FOR IBM, etc.
New, 8 ft. cords, list $4.95 ..... each **$2.50**
Also ... Chasis Mt. Socket ..... **$ .50**

Cords	1	10	25
	$2.50 ea.	$1.90 ea.	$1.75 ea.

NEW! 25 ft. AC Cord for IBM ..... **6.50 ea.**

TRS-80 MODEL III CPU BOARDS

LIMITED SUPPLY!
Motherboards are surplus and come with Z-80, Character rom and other components. Each is complete except ROM/RAM. One punch hole in each board is easily repaired. Not junkers that have had all the socketed chips removed! Each is a rebuildable unit. W/Doc. **$13.50**

10 day no risk money back offer on each!

MODEL III PARTS BOARDS: A few other chips missing or more damaged and are offered for parts only at a reduced price ..... **3 for $15.00**

1200 BAUD MODEM

Latest Technology! 1200/300 Baud Internal Halfcard Modem for IBM. Includes Software. Features Full Hayes Compatibility. Introductory Price **$149**

MASTER POWER PANEL

All Steel, Surge protecting master power control panel with separate illuminated switch for each of five peripherals! Attractive buff color, 10 amp, Surge/Spike protection panel fits conveniently between Computer and Monitor. Retail value $129 ..... **Special $59**

PROTECTED POWER STRIP
Four switched and two live sockets, plus illuminated switch and spike/surge protection at low cost . **$15**

IBM PC/XT COMPATIBLE KEYBOARDS

ENHANCED Standard IBM layout with enlarged Return key and lighted number and caps lock. Exceptionally crisp keytouch makes it a suberb choice for the touch typist ..... **$ 75**
Keytronic 5151 style keyboard **$99**

PC/XT EXPANSION CARDS

Floppy Disk Controller with Cables	$ 45
Color Graphics and Mono Graphics Card	$ 79
Parallel Printer Adaptor	$ 35
Serial Async. Com. Adaptor	$ 35
300/1200 BAUD Hayes Comp. Internal Modem	$169
Disk I/O: FDC/PAR/SER/CLOCK/GAME	$105
Surge Protection Multi AC Outlet Bar	$ 15
IBM compatible ROM set for Basic	$ 39
Plug in EPROM programmer with software	$149
CopyIIpc Option Board	$ 94
Keyboard Extension Cable for IBM $5	10/$39
25 ft IBM AC Pwr Cord	$6.50
Parallel IBM printer cable, 6 ft.	$ 17
Trade-ins accepted on IBM kbds., P.S., etc.	Call

IBM PC, XT is a registered trademark of International Business Machines Corp

Dealer Inquiries Welcome

IBM PC/XT COMPATIBLES

COMMANDER XT
Entry System Semi-Kit

- Commander XT + board with 256 K installed (up to 640K on board) (Famous Commander Bios)
- 135 Watt Hard Disk ready Power Supply!
- Extra Heavy Gauge Flip Top System Case!
- Floppy Controller and 1 Drive!
- Color/Monochrome Graphics Adapter!
- IBM style keyboard with enlarged Return. Caps/number lock lights!
- Just bolt it together, connect cables and start computing!
- All boards fully assembled and Tested!
- Assembly instructions. 10 day money back offer. 90 day warranty!

PRICE CUT!!

Special ..... Was $769 ... **$599**

Plus $12.00 shipping each

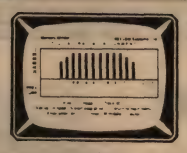
COMMANDER XT+
640K Mainboard
Maximum IBM XT Compatible

PRICE CUT!!

- 8088 5 Meg CPU
- 8 slot exact XT size Mainboard
- Up to 640K on board using 256K Chips!
- Fully Assembled and Tested W/0K
- Runs all the IBM benchmark Software!
- Maximum Compatible COMMANDER Bios

Special **$135**
8 MEG TURBO XT VERSION **$169**

DIGITAL DRIVE DIAGNOSTIC



Test and Align your own drives using your computer, WITHOUT a Scope or costly equipment. Easy to use and accurate! Tests Speed, Clamping, Alignment Azimuth, Hysteresis. For IBM PC compatible MS-DOS computers. Includes Dysan Alignment Disk, Program and Comprehensive Manual **$96**
By J&M Systems. Also available for Apple & Tandy.

135 Watt P.S. and Case

Superior Quality control insures our 135 watt IBM XT hard-disk-ready power supply will give you years of quiet and cool reliability. Side switch unit exactly replaces orginal IBM power supply. ..... **$ 85**

Attention to detail makes our superbly crafted IBM XT **flip-top system case** the best choice. Includes all hardware. Faceplate is verrrrry close to the same as IBM. Fits IBM PC/XT and exact compatibles ..... **$ 49**

Add $4.00 extra shipping for each case - they are heavy!

TERMS: **WE'VE MOVED TO SERVE YOU BETTER & FASTER!**
Shipping **$3.00 per order** unless otherwise stated. C.O.D. add $1.90 extra. Texas residents add 5.125% tax. **Certified Check or Money Order shipped same or next day.** Personal **checks may be held** 10 days. **C.O.D. orders welcomed.** *Give us a call.* ***(214) 395-2922.*** We ship UPS ground. Air available at extra charge. Give us a call for **fast friendly service.** FREE flyer sent with each order. **NO CREDIT CARDS ACCEPTED.**

ARNOLD COMPANY · Computer/Electronic Supply · P.O. Box 512, Commerce, Texas 75428.

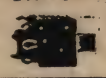
GREAT PRICES! GUARANTEED 100%

CARD EDGE CONNECTORS

62 Pin-Used in IBM Clone Moth. Bds. .95

AMP-6 530843-3
30 Pin..... .75

SWITCHCRAFT-PC142A



JACK .19 ea.

DELAY LINES

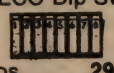
YOUR CHOICE
$2.95 ea.
69NS 100NS
150NS 300NS

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

EECO Micro

Trim Pot
.12 ea.

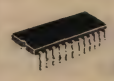
EECO Dip Sw.



8 Pos. .... .29 ea.

IC's AND COMPONENT PARTS

V-20 — 5 - 5mhz NEC Speed up IBM by 30% $12.95
V-20 — 8 - 8mhz NEC $17.95
V-30 — Replaces 8086 in your system $24.95



Fundamental Simple Rom for IBM Clone Mother Board.... $ 7.95

DISC DRIVES

Qume 142A — 1/2 Ht. DSDD ..... $ 89.95
Teac, Maple — 1/2 Ht. DSDD Direct Drive $119.95

POWER SUPPLY 150 W Side Mount Sw. $79.95

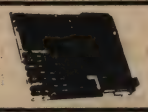
48 KEY ASSEMBLY

Used on a T.I. computer (PN900181). This key assembly measures approx. 4" × 9". Terminates to a 15 pin connector.

$2.97 ea.

640K MOTHERBOARD

with O/K on Board
$139.95

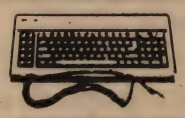


XT TYPE SLIDE IN CASE

Ruggedized
$49.95

KEYBOARDS

5150 Type $69.95
5151 Type $99.95
5150 Type (AT LookALike) $79.95



SWITCHING POWER SUPPLY

INPUT:
14Vac - 25.5 Vac
OUTPUT:
12 Vdc @ 350 ma
5 Vdc @ 1.2 amp
5 Vdc @ 200 ma

Compact, well regulated switching power supply. Designed to power Texas Instrument computer equipment.
SIZE: 4¾" × 4¼" × 1¼" high

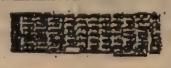
$1.95 ea.
2 for $2.95 $1.37 ea.

MULTI IO CARD

Contains Serial Port, Parallel Port, Game Port, Clock, Floppy Control

$119.95

COLOR GRAPHIC CARD



Mono Graphic Card
with Print Port $119.95
Floppy Disc Control Card..... $ 49.95

$99.95

SPECIAL SALE

HM6116LP-3
16K Static Ram - 150ns
Hitachi
Supplied in 24 Pin SOCKET

.47 ea.

8 MHz TURBO MOTHERBOARD

With 64K/On Board
$199.95

INTEGRATED CIRCUITS

74 Series

74XX	.22	74Sxx	.27
741XX	.32	74S1XX	.37
742XX	.37	74S2XX	.44
743XX	.44	74S3XX	.49
74LSXX	.22	74ALSXX	.33
74LS1XX	.33	74ALS1XX	.39
74LS2XX	.44	74ALS2XX	.40
74LS3XX	.49	74ALS3XX	.59
74FXX	.29	74HCXX	.37
74F1XX	.39	74HC1XX	.49
74F2XX	.55	74HC2XX	.59
74F3XX	.59	74HC3XX	.69
74HCTXX	.33	74SCXX	.33
74HCT1XX	.46	74SC1XX	.44
74HCT2XX	.59	74SC2XX	.59
74HCT3XX	.75	74SC3XX	.75

CMOS

Any 4000 series ..... .26
Any 4500 series ..... .49

Z80 Series
2.5mhz

CPU, CTC, PIO ..... .85
DMA, Dart, SIO 2.15

4 Omhz (A)

CPU, CTC, PIO..... 1.75
DMA, Dart, SIO 4.15

6 Omhz (B)

CPU, CTC, PIO..... 2.75
DMA, Dart, SIO 7.95

6500/6800 Series

Any 65XX, 68XX 1.80
Any 65xxA, 68xxA 2.50
Any 65xxB, 68xxB 3.98

E PROMS

2708 — 450ns 1.19
2716 — 450ns 1.59
2716 — 350ns 2.25
2732orA — 450ns 1.50
27320rA — 250ns 2.40
2764 — 450ns 2.20
2764 — 250ns 2.80
27128 — 200ns 3.95
27256 — 250ns 7.95

RAMS

16K - Dynamic — 200ns ..... .39
16K - Dynamic — 150ns ..... .55
64K - Dynamic — 200ns 1.15
256K - Dynamic — 150ns 3.35
16K - Static — 200ns 1.25
16K - Static — 300ns ..... .95
64K - Dynamic — 150ns 1.25
2114 Type - Static..... .69

8000 - 8100 - 8200 MEMORY IC's

800's

8031	3.95
8035	2.95
8039	2.45
INS8060	9.95
INS8073	9.95
8080A	1.70
8085	3.95
8085A-2	9.95
8086	4.50
8086-2	5.20
8087-3	129.95
8087-2	169.95
8088	6.95
8089	29.95

8100's

8131	2.45
8155	2.45
8155-2	2.75
8156	6.90
8185	19.95
8185-2	29.95

8200's

8202	9.95
8203	19.95
8205	2.50
8212	.90
8214	.95
8216	.90
8224	1.90
8226	1.90
8228	2.20
* 8237	2.90
8238	2.35
8243	1.25
8250	3.70
8251	1.75
8251A	1.85
* 8253	1.75
* 8253-5	1.75
* 8255	1.75
* 8255-5	1.75
8257	1.75
* 8259	1.75
8271	39.95
8272	3.95
8274	8.95
8275	8.95
8279	2.50
8282	2.95
8283	5.95
* 8284	2.45
8286	3.45
8287	5.95
* 8288	3.95
8289	3.95
8292	9.95

* = Used in IBM Clone Motherboards

I.C. SOCKETS

ALL ARE SOLDER TAIL

PIN	CAT #	PRICE
8	ICS-8	.065
14	ICS-14	.075
16	ICS-16	.085
18	ICS-18	.095
20	ICS-20	.105
22	ICS-22	.12
24	ICS-24	.125
28	ICS-28	.135
40	ICS-40	.165

IBM CLONE PC/XT Compatible COMPUTER STARTER SYSTEM only $345.95

contains:
- Compatible motherboard with No D rams (can take 640K)
- 135 Watt Power Supply
- 5150 Style Keyboard
- XT Type Flip-Top Case

$395.95 with 8 MHZ turbo board instead of 4.77 MHz-640K motherboard.
• *Speeds up system almost 50%.*

Tested Components with ***FREE ONE YEAR WARRANTY***
Important: above system will run Lotus, Word Star, Flight Simulator, etc. Software

MISCELLANEOUS IC SPECIALS

Z80CPU	.75	Z80CTC	.75	Z80AS10/2	1.80	6800	.75
Z80P10	.75	8086-2	3.95	8877A	.95	CDP1802D	.95
SY2661A	.75	8048	1.50	9927	.95	D8035L	1.95
SY2661	.75	8039L6	.95	9937	.95	D8202A	1.95
AM2901	.95	8088	5.95	CRT9212	.95	D8203A	1.95
AM2910	.95	8257	1.50	9517A	.95	CON8017B1	.95
2502	.95	8237A4	1.95	LM747	.22	80C35M	.95
2601	.95	8253	1.50	8255A	1.50		
2158	.85	8259	1.50	8272A	.95		
6810P	.75	8284	1.94	8273A	1.25		
6821P	1.25	8288	3.50	6850P	.95		
WD1793-02	3.25	Z80ACPV	1.50	6845P	.95		
Z80AOTC	.95	Z80AP10	1.50				

RGB COLOR MONITOR

$324.95

TTL Mono Monitor..... $119.95

COAXIAL CONNECTOR AMP
.69 ea.

TRANSISTOR SPECIALS

Part No.	ECG Equiv.	Type
2N5458	457	J Fet
2N4117A	133	J Fet
IRF-722	67	MOSFet
IRF-530	66	MOSFet
2N5912	472	RF Pwr
2N5566	5688	
3N164	—	P Chan Fet

.19 ea.

CUT LEAD IC PROGRAM

These IC's are cut lead types — Useable in PC Boards or Sockets* any @ .16 ea.

Any 74XX or 74XXX
74LSxx or LS1XX
or LS2XX or LS3XX
Any 74Sxx, S1xx, S2xx
or 74S3xx.

20 MB HARD DISK SYSTEM

SEAGATE ST-225
INCLUDES CARD & CABLES
1 YR. WARRANTY $485.95

*MINIMUM ORDER

$20.00

ELECTRONIC PARTS OUTLET
2515 N. Scottsdale Road
Scottsdale, AZ 85257 (602) 941-9377
(SEND FOR OUR FREE CATALOGUE)
CALL (602) 941-9328, 9

In Phoenix, AZ
ELECTRONICS PARTS OUTLET
1921C W. Thunderbird
Phoenix, AZ 85023
602-375-0181 ,2

In Florida (call for pricing)
ELECTRONICS PARTS OUTLET
2275 So. Federal Hway
Del Ray Beach, FL 33444
305-265-1206 ,7

Please call for current prices. Prices subject to change. Please expect higher or lower prices on some parts due to supply and demand and our changing costs. Shipping and insurance extra.

NOW 3 RETAIL LOCATIONS AND MORE TO COME

MasterCard VISA

TELEVIDEO 806 CASES NEW $129.00

New Cases with latest Rev. Power Supply (the new linear version)
Latest Rev. 806 PCB's, new, tested, (when purchased with case) $350
WD1000 Hard Disk Controller, (when purchased with case) $150
Hard Disk Drives TM603S-10Mb $225
Rodine 203-20Mb $449
As Is Logic & H.D. Controller PCB's, (when purchased with case), Ea. $5

Ask About Package Deal

TELEVIDEO

Cases, PCBs, Power Supplies, Manuals, Hard Drives, Controller Cards, CRT's, Accessories, Special Chips, Video Modules.

8 BIT — Z80 CPU

TS800, 802, 803, 806, 816 & TPC-I

These are Z80A based single board computers with all TTL, crystal OSC, sockets and connectors in place. They support CP/M and/or MmmOST and interface to 1 or 2 floppies and/or a hard disk drive depending on the board. They require the Z80A family of chips plus a 1793, 2143, 1691, and 8-4164's (16 for the 816). In addition the 800, 802 and 803 require a 6545 CRT Controller. The 806 and 816 are multi-user computers and will support 6 (806) or 16 (816) user stations. The 803 and 816 both support 128K of RAM. The 803 has 64K already soldered in place. The 801, 806 and 816 all require RS232 type terminals. The TPCI is the portable version of the 803. The TS800 is the work station for the TS806.

TS 800 KIT & PARTS
Case (PS, Video Module, CRT & Keyboard) $349
PCB $299
Case & PCB Combo & all doc's $549
TS800A (complete) $499

TS 802 KIT & PARTS
Case (PS, Video Module, CRT & Keyboard) $249
PCB $349
Case & PCB Combo & all doc's $549

TS 803 KIT & PARTS
Case (PS, Video Module, CRT & Keyboard) $399
PCB $299
Case & PCB Combo & all doc's $599

TS 806 KIT & PARTS
Case (PS, all hardware, all cables, ½h DSDD Flop.) $275
PCB Rev. D ..... $375 Rev. C $350
Case & PCB Combo & All docs. (includes telefast man.) $649
TS806 Complete + 10 Mb HD & Controller PCB $998
TS806 Complete + 20 Mb HD & Controller PCB $1247
TS800 Work Stations with above package ..... $499, 3/$1350

TS816 KIT & PARTS
Case (PS, all hardware, cables) $275
PCB $350
Case & PCB Combo & all docs. (no tape drive) $599
40 Mb, 8" Quantum HP & Controller PCB $999
Case & PCB & Hard Drive & Controller $1499

TS802 — TS802H UPGRADE KIT
10 Mb Hard Drive, controller card, Prom & Docs. $399
20 Mb Hard Drive, controller card, Prom & docs. $649

16 BIT — 8088 CPU

TS1602 - 250K/1mb 8088 CPU, 8087 (math processor), 8089 (I/O Processor), NEC 7220 (graphics controller), supports CP/M 86, 2-DSDD 40T floppies & hard drive.

TS1603 - 128K/256K, 8088 CPU, Supports MS-DOS & CP/M 86, 2-DSDD 80T floppies, hard drive & mouse.

TS1605 - IBM PC compatible - 128K/320K/512K, 8088 CPU. Supports all IBM PC software, includes color video, floppy controller, hard drive interface, mouse & bus extension.

TPCII - Portable version of the 1605.

TS 1602 KIT & PARTS
Same as TS802 except PCB is $300

TS 1603 KIT & PARTS
Same as TS 803 except PCB is $250

TS 1605/1605CH KIT & PARTS
Case (PS, Video Module, CRT & Keyboard), (Green)...$425, (Color) $599
PCB (has RGB & Composite) $499
Case & PCB Combo & all docs. (Green)...$899, (Color) $1075
DSDD 48 TPI floppy, each $99
Hard drive controller card $175
TPCII Kit & Parts — Same as 1605 except case comes with 2 floppies .... Call

We also have all of the PCB's in this ad in partly populated condition or as bare PCB's. In addition the following terminal PCB are also available.

910, 925, 950, 970 & the new Personal Mini Terminal

INOVATEK
45953 Warm Springs Blvd. #3, Fremont, CA 94539
(415) 490-5162 — (415) 659-9145
CODs—Certified Check or Cash
FRED KOVACS — WE BUY AND SELL ELECTRONICS GOODIES

dBASE III
continued from page 128

720K only from within the CONFIG.DB file. The syntax is MAXMEM = #. You should need to adjust this only if you have changed other variables (such as GETS and MVARSIZ) that affect memory use. You can only set this in the CONFIG.DB file.

MENU: This controls whether you get a menu showing how to move the cursor with full screen operations such as BROWSE. The default is OFF except when using ASSIST where the default is ON. It can be changed with MENU = ON in the CONFIG.DB file or with SET MENU ON from the dBASE prompt or in a program.

MVARSIZ: This controls how much space is allocated to programming variables. The default is 6K. It can be changed to 1K to 31K only from within the CONFIG.DB file. The syntax is MVARSIZ = #, where # is the number of K of memory to allocate to variable. MVARSIZ = 16 would allocate 16K to memory variables.

PATH: Just like the DOS PATH command, this controls the directory "route" that dBASE uses to find files not located in the default directory. The syntax is PATH = C:\DBASE,B:\ from the CONFIG.DB file or SET PATH TO C:\DBASE,B:\ from the dBASE prompt or from within a program.

PRINT: When PRINT is ON, all unformatted output (formatted output is lines from a program using @ ..,.. SAY) is sent to the printer as well as the screen. The default is OFF. That can be changed with PRINT = ON in the CONFIG.DB file or SET PRINT ON from the dBASE prompt or within a program.

PROMPT: This command is available only within the CONFIG.DB file. It allows you to change the dBASE dot prompt. I use dBASE3 + > with a space after the > to make commands more readable. The syntax is PROMPT = dBASE3 + >.

SAFETY: When SAFETY is ON (the default), dBASE asks you to confirm actions that will destroy data. It can be changed with SAFETY = OFF in the CONFIG.DB file or with SET SAFETY OFF from the dBASE prompt or in a program.

SCOREBOARD: dBASE places some messages on top of the monitor (such as *DEL* when a record is DELETEd but not PACKed). These can be turned off with SCOREBOARD = OFF from the CONFIG.DB file or with SET SCOREBOARD OFF from the dBASE prompt or a program.

STEP: When STEP is ON (OFF is the default) programs execute single step. This is useful for debugging programs. STEP is turned on with STEP = ON in the CONFIG.DB file or with SET STEP ON from the dBASE prompt or in a program.

TALK: When TALK is ON (the default), dBASE displays messages with many commands (such as APPEND and SUM). These can be stopped with TALK = OFF in the CONFIG.DB file or with SET TALK OFF from the dBASE prompt or in a program.

TEDIT: dBASE has a very limited clone of Wordstar for editing programs (MODIFY COMMAND filename). You can use any word processor that will produce straight ASCII text provided you have enough memory to run dBASE, the word processor and any memory resident programs. The syntax is TEDIT = WORD where WORD is the name of the word processor. The word processor must be in the same directory as dBASE or be in the DOS PATH command and be able to run across subdirectories. Wordstar can be used if it is in the same directory as dBASE or if you use a path extension program such as FILEFAC from IBM. Note that you should install the version of Wordstar used here to default to nondocument mode. dBASE also uses this same Wordstar clone to exit memo fields. Just as above, you can use your own ASCII word processor with WP = WORD. WORD is the word processor to use on memo fields. The two word processors do not have to be the same. This can only be set in the CONFIG.DB file.

UNIQUE: When UNIQUE is ON (the default is OFF) records with duplicate INDEX keys are ignored. This can cause loss of data and is best left OFF unless you have a lot of dBASE experience. It can be changed with UNIQUE = ON in the CONFIG.DB file or with SET UNIQUE ON from the dBASE prompt or in a program.

Example

```
ALTERNATE=DBASE.TXT
BELL=OFF
BUCKET=4
CARRY=OFF
COLOR=1/7,4/7,5
COMMAND=DO STARTUP.PRG
CONFIRM=OFF
CONSOLE=ON
DEBUG=OFF
DECIMALS=7
DEFAULT=C
DELETED=ON
DELIMITERS=ON
DEVICE=SCREEN
ECHO=OFF
ESCAPE=ON
EXACT=ON
F7='USE:CLOSE DATABASES:QUIT;'
GETS=200
HEADINGS=ON
HELP=OFF
INTENSITY=ON
MARGIN=15
MAXMEM=300
MENU=OFF
MVARSIZ=31
PATH=C:\DBASE\PROJECT1
PRINT=OFF
PROMPT=dBASE3+>
SAFETY=OFF
SCOREBOARD=ON
STEP=OFF
TALK=OFF
TEDIT=WORDSTAR
WS=WORD
UNIQUE=OFF
```

By selecting the features you want to change, and constructing the appropriate commands in the CONFIG.DB file, you can make dBASE work the way you want it to. ●

MONITOR SPECIAL
FOR PC/XT/AT & COMPATIBLES

SAMSUNG TTL
MD-1277 G
$75.00

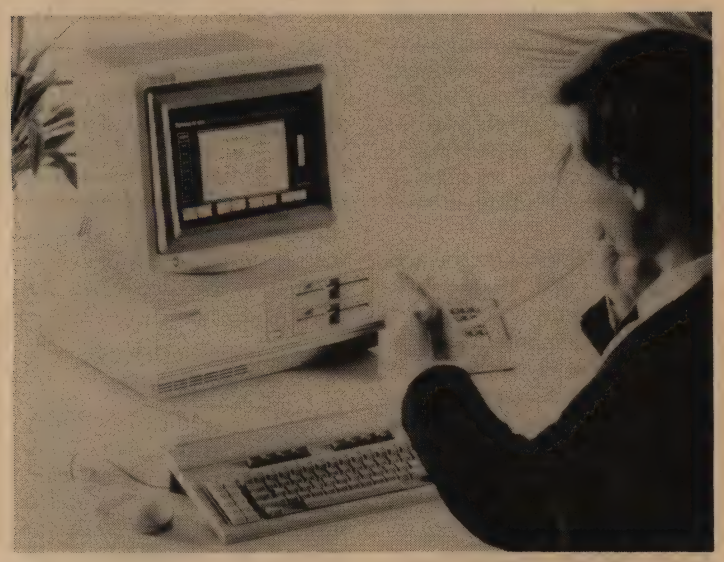
MITSUBISHI RGB
AT-1332 A
$269.00

CASPER EGA
WITH TILT & SWIVEL BASE
$429.00

QUANTITY DISCOUNT AVAILABLE

AMAX APPLIED TECHNOLOGY, INC.
1745 E. 7TH STREET, LOS ANGELES, CA 90021
(213) 612-0993

Voice-Communication Product For HP Vectra



Office Talk, a voice-communications manager for the HP Vectra personal computer and other IBM PC/AT compatibles, was announced recently by Hewlett-Packard Company.

Office Talk consists of a software application and an IO/card, and features telephone management, voice messaging, an appointments diary, a memo pad and remote access through any telephone in the world to all of these features.

Office Talk's telephone manager can answer the phone with a greeting message, take messages, forward messages, make calls and deliver messages. Up to 500 names and phone numbers can be stored in the telephone directory, allowing the telephone manager to dial and redial a number automatically until a call is completed.

Users can keep track of daily, monthly and annual meetings using the appointments diary, which also can be programmed by the user to provide appointment reminders by phone. Office Talk's memo pad lets users create notes by typing or speaking, and then lets users listen to those notes.

Natural MicroSystems will manufacture the Office Talk hardware in its Natick, Mass., facility.

"Our goal is to provide the benefits of voice communications by combining the power of a personal computer with the simplicity of the telephone," said Patrick Rabu, HP Office Talk product manager.

"Office Talk can eliminate such problems as telephone tag, missed opportunities and uncompleted calls because it will handle a phone while the user is absent. No longer will a business person forget or be late for important meetings, because Office Talk will provide an appointment reminder. And there also is the option of quickly recording notes or messages by speech, rather than typing them."

In addition, Office Talk can be used while other applications are in progress. For example, users can be working with spreadsheets, a word-processing application or a terminal-emulation package, and Office Talk can handle telephone calls at the same time.

Office Talk's functions can be easily accessed from menus using a touch-tone phone, a keyboard, an HP mouse or HP's Touchscreen PC. It is available to the user from any telephone in the world by means of the product's remote-access feature.

Office Talk is U.S. list priced at $995.

Natural MicroSystems Corporation was founded in May 1983 and is a leading producer cf packaged voice-processing products, voice-application development tools and voice-processing technologies for personal computers and larger systems.

Hewlett-Packard Company is an international manufacturer of measurement and computation products and systems used in industry, business, engineering, science, medicine and education. The company employs 84,000 people worldwide and reported revenue of $6.5 billion in its 1985 fiscal year.

Information in this release applies specifically to products available in the United States. Product availability and specifications may vary in non-U.S. markets.

For more information contact Hewlett-Packard Company, 1820 Embarcadero Road, Palo Alto, Calif. 94303.

Mention that you read about it in *Computer Shopper*. ●

NEWINT™

If ever a borrower or lender be....

NEWINT LOAN AMORTIZATION -Version 1.68

POWERFUL, FAST, FLEXIBLE.

SIMPLE operations and **FAST** calculations are ideal for **"WHAT IF" ANALYSIS** or use in meetings or during **PHONE NEGOTIATIONS.**

When you need to find out what the best alternatives are; recalculate last minute changes instantly; or give clients an easy to understand explanation of loan terms or status; with NEWINT the answers are right at hand.

- Loan terms or projections from 1 day to 50 years
- 1 to 365 payments a year
- Balloon or recap Interest and Payoff as of any day
- Solve for unknown Loan variables
  - Principal
  - Term
  - Payments per year
  - Interest Rate
  - Payment
- Optional Report Headers (Up to 5 lines)
- Print or Display Amortization Information
- Use Multiple Payment types in the same Loan
  - Calculated (Equal Principal & Interest)
  - Fixed Payment to Principal
  - Interest Only
  - Any amount less than original Principal
  - No Payment
- Supports Negative Amortization
- Define Creative Financing Options (as of any date)
  - Additional Payments to Principal
  - Change Payment Type
  - Change Payment Amount
  - Change Interest Rate
- Calculate daily Interest Notes based on Dates or length
- Calculate Note renewals or extensions
- Define first Payment as of any Date
- Calculate Interest on Installment or Daily basis
- Recap on Calendar or Fiscal year basis
- Select 360 or 365 day year
- Multiple methods of recapping Loan data
  - All Payments
  - Annual recaps only
  - Between any two Payments or Dates
- Year to Date Totals
- Loan to Date Totals
- And more

Newint is currently being used by **accountants,** tax services, **attorneys,** real estate brokers, consultants, commercial banks, savings & loans, **mortgage bankers,** appraisers, government offices, **investors,** businesses, and homeowners.

AVAILABLE FOR OVER 70 DIFFERENT COMPUTERS:

OPERATING SYSTEMS
CP/M 2.2, CP/M 3.0, MP/M II, CP/M-86, MP/M-86, Concurrent CP/M, PC/MSDOS 2.0 or later and Apple II.
COMPUTERS & TERMINALS
IBM, PC, XT, AT & "IBM compatibles" plus Atlos, Columbia, DEC (Rainbow DECmate III), Eagle, Epson QX-10, HP150, Kaypro, MacCharlie, Morrow Designs, NCR Decision Mate V, Osborne (I, Executive, & Vixon), Qume, RS Model II (PT), Tandy 2000, Televideo, Wyse, Xerox, Zenith, Apple II, II+, IIc, & IIe, and Commodore 128. (Inquire about others)

NO INSTALLATION NECESSARY

$59.95

Suggested Retail Price + $2.50 Shipping to U.S. & Canada
Iowa residents add 4% sales tax

MASTERCARD, VISA & AMERICAN EXPRESS ACCEPTED

To Order Call (515) 424-6591

BRIDGE SOFTWARE LTD.™
316 BRICK & TILE BLDG.
MASON CITY, IOWA 50401

MSDOS is a registered trademark of Microsoft, Inc.; CP/M, MP/M II, CP/M 86, MP/M 86, and Concurrent CP/M are trademarks of Digital Research, Inc.; IBM PC is a registered trademark of International Business Machines Corporation; Altos, Eagle, KAYPRO, Osborne Executive, Qume, Tandy, TeleVideo, Wyse Xerox 820 are registered trademarks respectively of Altos Computer Systems, Eagle Computer, Inc., Non-Linear Systems, Inc., Osborne Computer Corporation, Qume Corporation, Tandy Corporation, TeleVideo Systems, Inc., Wyse Technology, Xerox Corporation. Epson QX-10, MacCharlie, NCR Decision Mate V are trademarks respectively of Epson America, Dayna Communications, NCR Corporation.

PC CAD Gives Architectural Firm A Competitive Edge

by David Downing

Architects are rapidly trading in draft boards for low-cost yet powerful computers and software to take a project from schematic design to final contract documents. With new PC-based drafting and design software, firms are computerizing design and concept creation with promising results.

This rush to computerize has occurred, in part, because of increased competition for large building projects. Many well-established architectual firms that, in the past, cast a wary eye towards computers are beginning to see the benefits of having at least a portion of their design capability automated. Vastly increased design efficiency and flexibility, cost-savings and more comprehensive documentation are just some of the benefits discovered by architects with integrated computerized design and drafting available inhouse.

One firm experiencing these benefits firsthand is Heard & Associates, a Chicago-based architectural firm established in 1967. The firm is primarily involved with public sector work for federal, state and local clients in Illinois. It designs schools, multi-family residential facilities, rapid transit-related maintenance buildings, correctional institutions and military installations.

In 1980 the 15-member firm purchased two word processing systems to help with project specification and office project management. At that time, the company contemplated the use of computers for drafting. The primary emphasis was placed on finding a system that would allow the architects to develop contract drawings on a personal computer. The desired price range for software was between $3,000 and $4,000.

When Heard & Associates began reviewing drafting and design software, there were no design modeling systems on the market priced at what the firm wanted to pay. Over several years the firm's architects became familiar with a number of packages. In 1985 they chose the advanced architectural drafting module of Computervision's Personal Architect.

Soon after the software was in place at the firm, the architects were invited to participate in the "Architectural Shoot Out." Sponsored annually by the American Institute of Architects, the Shoot Out is an event in which participating end-users are asked to evaluate computer-based products developed for architectural firms and give presentations about the results at a gathering of other architects from around the country.

The 1985 Shoot Out focused on micro-based design and drafting systems.

As a participant, Heard & Associates was given the opportunity to implement the architectural design module of Computervision's Personal Architect. The system was installed in its Chicago office in June of that year, providing in-house graphics capability, including both drafting and design modeling.

Three of about thirty firms participating in the Shoot Out were asked to evaluate Computervision's Personal Architect. The software was used by Heard & Associates to design a two-story elementary school planned for construction within Chicago's well-known loop. The benefits provided by the software in implementing this design were top rated by the firm. The other firms evaluating the software also gave it excellent reviews.

Integrating Design With Drafting

With the addition of design capability to the firm's computerized drafting system, Heard & Associates adopted a more ambitious attitude toward computerization. In the past, computers were used only to develop documentation and for drafting. The integration of design and drafting, however, allowed architects to computerize schematic modeling and design development, as well.

With the elementary school project, the architects first established a massing model that showed general spatial relationships of classrooms, offices and other rooms. This provided a 3-dimensional model that could be used for visualization of the building envelope as well as conceptualizing interior layouts.

Floor plans, sections, elevations and perspectives were then used in design development to further delineate the design for the client.

Heard & Associates' Carol Schmidt was the principle user of the system when it was introduced into the office. She has been the primary implementer of this "total project" computer-aided drafting/design (CAD/D) system approach. Schmidt said it took about three weeks to learn the basic commands of Personal Architect and about three to six months to use all the features properly.

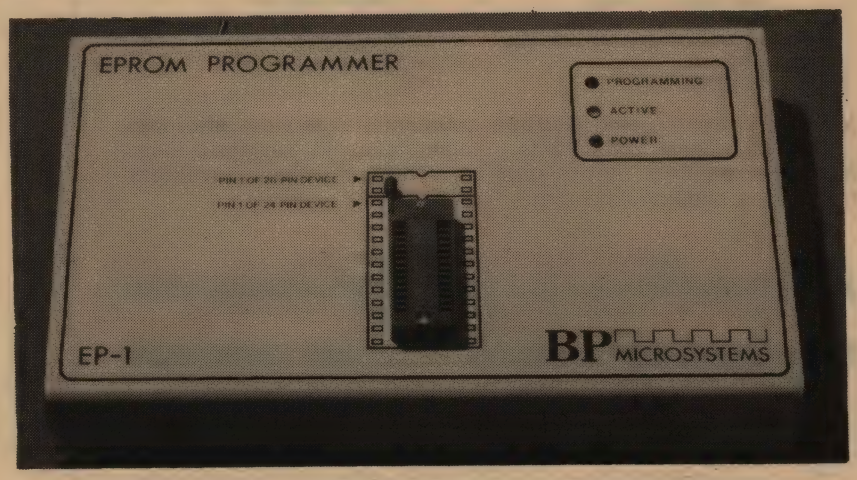
In using the system for design and drafting functions throughout a project's execution, every member of the project team comes in direct contact with the system. The designer begins a project using the modeling facility to create a three-dimensional representation of the system from which interior and exterior perspectives allow for initial representation of the design.

During the documentation phase, the drafter uses the same model to generate the basis of floor plans, elevations

continued on page 136

EPROM PROGRAMMER

You can program or duplicate virtually every EPROM or EEPROM up to 512K with the low cost EP-1. Menu-driven chip selection gives you the correct programming algorithm quickly and easily. You save programming time by getting the fastest intelligent programming algorithm recommended by the manufacturer. The EP-1 works with the IBM PC, XT, AT, and compatibles, development systems, CP/M systems and other computers. The EP-1 costs only $349 and requires no modules or software to program the full spectrum of MOS and CMOS EPROM's and EEPROM's. It is covered by a full one-year limited warranty.



FEATURES
- Fast Programming Algorithm
- Menu Driven Chip Selection by Manufacturer and Part Number
- Supports Chips Individually, not Generically
- Reads and Programs with Intel, Tekhex, Motorola and Straight Hex formats as well as Binary Files
- Generates and Checks Checksums
- Microprocessor Controlled
- Gold Textool ZIF IC Socket
- RS-232, 7 baud rate from 150 to 9600
- Automatic Self Test

PC-DOS COMMUNICATION SOFTWARE (included)
- Works with IBM PC, XT, AT or compatible
- Programs in batch mode
- Automatically uploads and downloads files

EP-1 EPROM Programmer Device List

AMD
Am2716
Am9716
Am2732
Am2732A
Am2764
Am27128
Am27128A
Am27256
Am27512
Am9864

Fujitsu
MBM2732A
MBM2764
MBM27C64
MBM27128
MBM27256
MBM27C256

Generic
2716
27C16
2732
27C32
2732A
2764
27C64
2764A
27128
27C128
27128A
27256
27C256
27512

Hitachi
HN462716
HN462532
HN462732
HN482732A
HN482764
HN27C64
HN4827128
HN27256

Intel
2758
2716
2732
2732A
2764
2764A
27C64
87C64
27128
27128A
27256
27512
27513
2816A
2817A
2864

Mitsubishi
M5L2764
M5L27128
M5L27C128

Mostek
MK48Z02

Motorola
MCM2716
MCM2532
MCM68764
MCM68766

National
MM2758-A
MM2758-B
MM2716
NMC27C16
NMC27C32
NMC27C256
NMC9817
NMC98C64A

NEC
uPD2716
uPD2732
uPD2732A
uPD2764
uPD27C64
uPD27128
uPD27256
uPD27C256

OKI
MSM2764RS

Rockwell
R87C32
R2764
R27C64
R87C64
R2816
R5213
R52B13
R52B33

Seeq
2764
27128
27256
27C256
2816A
2817A
5133
5213
52B13
52B33
5516A
55B33
5517A

SGS
M2716

TI
SMJ2516
TMS2516
SMJ2532
TMS2532
TMS25L32
TMS2732A
SMJ2564
TMS2564
TMS2764
TMS27128

Toshiba
TMM2732
TMM2764
TMM27128
TC57256
TMM27256

Xicor
X2804A
X2816A
X2816H
X2864A
X2864B
X2864H
X28C64

EPROM Erasers from $34.95

BP MICROSYSTEMS
5325 Glenmont, Suite E, Houston, TX 77081
(713) 667-1636

Amdek New Model 1280 Monochrome Graphics Display Subsystems

Amdek Corp. now offers a very high resolution monochrome graphics display subsystem (monitor and adapter). The new subsystem (for IBM PC, XT, PC/AT and compatible systems) meets the demanding display resolution requirements of CAD/CAE (computer-aided design/computer-aided engineering) and desktop publishing with a 1280 x 800 display mode. It also maintains compatibility with standard PC applications software with 640 x 200 monochrome or CGA color emulation in monochrome; colors are mapped into four shades of intensity. The Amdek Model 1280 Monochrome Graphics Display Subsystem, complete with tilt/swivel stand, is available for $1,595 (suggested US resale) at participating distributors and dealers; dealer, OEM and VAR inquiries invited.

The Model 1280 non-glare 15-inch CRT boasts high-contrast white phosphor. Its display adapter supports 1280 x 800 bit-mapped graphics and two complete hardware-generated 256-character sets, with automatic switching. Its high (32 KHz) horizontal scan frequency, 50 MHz bandwidth and 16 x 32-dot character cell deliver extraordinarily sharp, clear graphics and up to 50 text lines with up to 160 characters per line.

The Amdek Video 1280 measures 13.6x14.4x11.9 inches (HWD) and operates from 120 Volts 60 Hz AC or 220 Volts 50 Hz AC. It is U.L. listed and FCC certified.

For further information contact Amdek Corp., 2201 Lively Boulevard, Elk Grove Village, IL 60007; (312) 364-1180.

Mention that you read about it in *Computer Shopper*. ●

Can't Find *COMPUTER SHOPPER?*

If you can't find *COMPUTER SHOPPER* in your favorite store. Tell the retailer, then fill out the form below and return to us. We will make every effort to get *COMPUTER SHOPPER* into your favorite store as soon as possible.

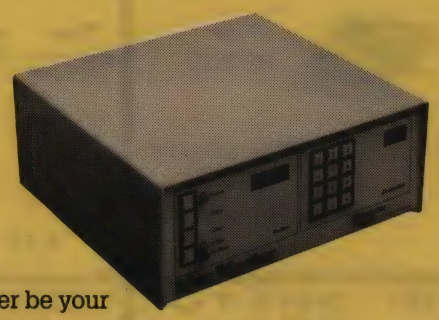
Store Name _____
Address _____
City _____
St. _____ **Zip** _____
Phone _____

COMPUTER SHOPPER

Patch Publications
407 S. Washington Ave.
Titusville, FL 32796
305-269-3211

Computer Friends Buffers, the new generation.

MAC MASTER™
Universal Buffer & Printer Controller.



LOOK!
Let Mac Master be your

1. Buffer and free your Computer Memory
2. Printer Controller. Mac Master stores/recalls all the fonts and commands of any printer you connect to it.
3. Auxiliary Memory. Mac Master stores/recalls files, logos, graphic symbols, etc.

Plus multiple copy capability, memory and copy no. display, pause and bypass option, and more. Available in **parallel** or **serial.**

64K **$299.00** — 256K **$450.00**
1 MEG **$750.00**
Shipping $4.00 U.S.

PROTEUS™
Double Buffer & Data Switch (Parallel).

Connect 2 printers or other parallel peripherals to PROTEUS and you will have:

1. Buffer on Port 1 and 2.
2. Switching capability (manual or via software).
3. Multiple Copy capability on both ports.

PROTEUS 64K – $199.00
PROTEUS 256K – $299.00
Shipping $4.00 U.S.

Mac Master and/or Proteus are easily installed and can be used immediately. 12 Months Warranty.

UNIVERSAL
MAC INKER™
Re-ink your Fabric Ribbons automatically for less than 5 cents.

Extremely simple operation. We support any fabric cartridge. The **Universal Cartridge MAC INKER** is **$68.50**. The Universal Spool MAC INKER is **$66.95**. Our lubricated, dot matrix ink ($3.00/bottle) yields a darker print than most new ribbons. Estimated no. of re-inkings per avge. cartridge 60-100. MAC INKER has been reviewed, approved and flattered in most magazines, even in the New York Times and the Chicago Sun Times.

$68.50

Shipping $3.00 U.S.

(Universal w/C. Itoh Prowriter Cartridge).

Over 50,000 MAC INKERS in the field as of Jan. 15, 1986.

RE-INK IN COLOR TOO
We have colored or un-inked cartridges or reloads for most popular printers. Colors: Brown, Blue, Red, Green, Yellow, Purple, Orange and Gold. Please inquire.

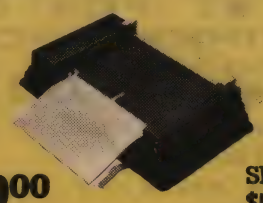
MERCURY MODEM
Really 100% Hayes* Smartmodem Compatible. ■ 300/1200 Baud Speed. ■ Auto answer, Auto dial, Auto speed selection. ■ Audio monitor w/Volume Control. ■ Front Panel lights. ■ Excellent Manual. ■ 18 months warranty.

$205.00 Includes power supply and telephone cable. Computer to Modem cable $15.00. Shipping $4.00

*Hayes is a trademark of Hayes Microproducts.

mac-the-ripper™
Perforation Eliminating Machine.

Tears off the perforations from computer paper. Feed in the first sheet of the stack and let mac-the-ripper do the rest. Eliminates tedium and can pay for itself promptly in saved personnel time.



$49.00 Shipping $5.00 U.S.

DATA SWITCHES
All types, all lines switched, all metal, heavy duty switch, elegant design, best value for money.

2 Ports Parallel or Serial	**$ 75.00**
4 Ports Parallel or Serial	**$150.00**
2 Computers/ 2 Printers Par. or Ser.	**$150.00**

We have cables too. Please inquire or specify at time of order.

Order Toll Free.
Call or Write for free brochure.
1-800-547-3303
In Oregon 503-297-2321 (24 hours line)

Computer Friends®
6415 SW Canyon Ct., #10
Portland OR 97221
telex 4949559

Lotus Announces Maintenance Releases Of 1-2-3 Release 2

Lotus Development Corporation announced a maintenance release of 1-2-3 Release 2 that makes several technical improvements to the product. The new version, Release 2.01, is compatible with both 1-2-3 Release 2 and Release 1A, and is designed to work on the IBM-PC and compatible personal computers.

The company also announced that several additional versions of 1-2-3 Release 2.01 are currently in development to work with the following personal computers: The Wang Professional and Advanced Professional computers, the DEC Rainbow family, the Hewlett-Packard 150, and the IBM-PC Convertible.

1-2-3 Release 2, introduced in September of 1985, was the first significant upgrade of 1-2-3 since the product's original release in January 1983. 1-2-3 Release 2.01 improves compatibility with Release 1A, but is designed not to affect adjustments customers may have made to convert their worksheets from Release 1A to Release 2. The new version has a simplified installation procedure, a new display driver allowing on-screen graphics display of ASCII codes above 127, a faster file retrieve time, and faster recalculation.

The following enhancements to Release 2.01 were made to improve compatibility with Release 1A worksheets:

- Labels in Release 2.01 worksheets now equate to zero when used in a mixed formula reference.
- It is no longer necessary to make adjustments (when using Release 1A worksheets) to 1-2-3 functions such as changing @TODAY to @INT@NOW, or to use @N with mixed formula references.
- Financial @ functions (@PMT, @PV, and @FV) now permit negative and fractional arguments.

In addition to these features, a number of minor technical changes were made to improve the overall quality of the product.

Dan McMillan, Lotus' vice president and general manager of the business Products Division said, "Our highest priority here at Lotus is to protect our customer's investment in our software. Our customers tell us they want continual improvements in power and functionality, without having to discard the work they have done or the skills they have gained working with earlier versions of the software. The new release of 1-2-3 is an important step in the careful evolution of that product and also underscores Lotus' commitment to technical excellence."

Registered 1-2-3 Release 2 customers, and customers who participated in the Release 2 Upgrade Program, will receive a mailer with instructions on how to obtain Release 2.01. There is a $15 shipping and handling fee per copy ordered. All customers must be registered to participate in the 1-2-3 Release 2.01 Program.

Details on how customers may obtain 1-2-3 Release 2.01 for the Wang, DEC and Hewlett-Packard personal computers will be announced when those products are available.

For more information contact Lotus Development Corporation, 55 Cambridge Parkway, Cambridge, MA 02142; 617-577-8500.

Mention that you read about it in *Computer Shopper*. ●

Daytapro Electronics
PO Box 7146, Buffalo Grove, IL 60089
PHONE ORDERS WELCOME
312-870-0555

RS-232 TESTER
MONITORS TD,RD,CD DSR, RTS DTR, CTS ALL LINES FEED THRU
#23-1907Y $16.95

RS-232 GENDER CHANGER
$8.95
#23-1908Y M To M
#23-1909Y F To F

NULL MODEM
For RS232
#23-1910Y
$14.99

SURGE PROTECTOR
For RS232
$17.95
#23-1912Y

PATCH BOX
Allows Cross Connecting of RS-232 Lines
#23-1911Y $14.99
#23-1914Y Case Only $ 2.99

RS-232 BREAKOUT KIT
Monitors, open or short 8 of the most used RS-232 Lines
#23-1807Y $29.95

AB SWITCH BOX
RS-232 SERIAL
23-1926Y 2POS 49.95
23-1928Y 4POS 69.95
CENTRONIC PARALLEL
23-1937Y 2POS 54.95
23-1938Y 4POS 79.95

COMMODORE RS-232 INTERFACE
Switch Selectable Outputs. Ideal for Packet. KITS
#23-1821Y $29.95
4 SLOT EXPANDER
#23-1864Y $24.95

SPEECH SYNTHESIZER KIT
Works with Parallel port. Has Complete Dictionary
#23-1756Y $29.95

64K PRINTER BUFFER KIT
Allows Serial in or out/Parallel in or out or any combination of both. Kit Only
#23-1812Y $69.95

IBM CABLE 6 FT. LONG
#35-3636Y 36/36pin $15.95
#35-2536Y 25/36pin $9.95

CENTRONIC CONNECTORS
31-3610Y M/P $3.99
31-3611Y F/S $3.99
31-3620Y Midc$4.99
31-3621Y Fidc$4.99

IBM XT COMPATIBLE PRODUCTS

2 DRIVE SYSTEM WITH 256K & KEYBOARD	#92-6081Y	$698.00*
20 MEG HRD DRV SEAGATE 225/WD CONT.	#92-3205Y	$539.00*
150 POWER SUPPLY	#92-5159Y	$109.00
AT STYLE KEYBOARD FOR XT COMPUTER	#92-5152Y	$ 99.00
DISK I/O W/CLOCK/CAL/PAR/2 SER/GAME	#92-5205Y	$119.00
COLOR GRAPHIC - 2 COMPOSIT AND RGB	#92-5642Y	$ 89.00
384K MULTI FUNCTION OK	#92-5206Y	$125.00
384K MULTI FUNCTION 384K 150ns	#92-5384Y	$169.00
GAME ADAPTER CARD	#92-5102Y	$ 35.00
EPROM PROGRAMMER (UP TO 27128)	#92-5271Y	$139.00

RS-232 CONNECTORS
DB25S DB25P
31-2517Y Male 1.49
31-2520Y Fmle 1.59
31-2518Y Hood .79
31-2519Y Clam .79

AC STRIPS
4 SWITCHED 2 ON ALL THE TIME.
SURGE PROTECTED
#92-5110Y $15.99

SEND $1 FOR OUR FREE CATALOG
MONEY BACK GUARANTEE
TERMS- VISA/MC-Check-MO-COD
Add $3.00 Shipping & Handling
Add 3% Shipping & Handling where ‡ is
Ill. Residents add 7% Sales Tax
Commodore Trademark of Commodore Intl.
IBM Reg. Trademark of IBM Corp.
Daytapro Electronics
PO Box 7146, Buffalo Grove, IL 60089
PHONE 312-870-0555

Color Commander: Push Button Color Control

by Peter Ruber

Although I find graphic programs like IBM's PC-PALETTE fun to work with, the color palettes available with the Color Graphic Adaptor are frustrating in their color choices. If the drawing lacks balance and contrast, there's often no alternative but to start over again.

While the IBM and compatibles Color Graphic Adaptor generates 16 colors, the medium resolution mode of 320x200, and the 16K RAM of available screen memory, limit you to a background color plus two conbinations of three color palettes. In high resolution graphics mode (640x320) there is even less memory available for your color display, as the CGA will only support hi-intensity white in a black background.

If you work extensively with the IBM system designing creative graphic images, preparing charts and graphs with integrated software packages such as Lotus, or pursue computer aided engineering and designing of circuit boards, schematics or even architectural renderings, you may find that Color Commander can perform some magical color tricks at the push of a button.

How It Works

Color Commander is a slim console measuring 13"x13" x2.5". It sits between your computer case and your RGB monitor. The DB-9 cable from your monitor plugs into the back of Color Commander. A similar cable from the back of the console plugs into your CGA card (or into the RGB connector port if you're using an IBM compatible portable). Power to the Color Commander is provided by a 9-volt AC adaptor.

The operating concept is deceptively simple. Color informations from the computer consists of four data bits, one each for Red, Green and Blue, and one for Intensity. These data bits are rerouted through the Color Commander to the RGB monitor. Each four-bit color data byte is decoded to light an LED. The LED's thus indicate the particular colors that are being called for by the software program. Associated with each of the sixteen color indicators is a push-button color-coded membrane switch for color selection.

Each color data byte, in addition to being identified and indicated, addresses a color register in the Color Commander circuitry, and the output of that particular address is immediately sent to the RGB monitor in place of the original color data.

If you're not satisfied by the combination of colors on your screen, you merely press the button of the color you wish to change. A LED in the SELECT COLOR panel will light up to indicate that a change is forthcoming. Then you press the button representing your new color, and the screen presents you with an instant change.

Color Commander is activated through a front panel power switch on the left. It must be turned on before your RGB monitor can receive any of the color signals from the computer.

A second switch, next to the membrane-switch panel, selects your operating mode. NORMAL (in the OUT position) allows your color signals to pass through to the monitor undisturbed. In order to manipulate any color changes, you must push this button to the IN position, which is marked ACTIVE. Since my Color Commander has become a permanent fixture in my daily use of the computer, I leave this switch in the ACTIVE position at all times.

Color Commander is especially welcome with word processing programs that were originally written for the old monochrome card which provide for a dull image of white lettering on a black background. Some of these programs also generate the hi-intensity white for high-lighted areas within the text or in the program's on-screen command prompts.

You can now breathe life into these programs with Color Commander. If you wish to change the white text to yellow, to simulate an amber monitor, press the white button and the yellow button. Then you can soften the contrast by changing black to blue. And by leaving the hi-intensity white as is, you can create a three-color screen to work on.

Due to some problems I have been having with my RGB monitor (which I shall describe shortly), I prevailed upon Perma Power to supply me with color prints. The actual drawing was made using Mouse Systems PC PAINT, and were photographed with Kodak InstaGraphic Slide System.

Using conventional commands within your graphic program, changing any color to one not included in your color palette would have required you to redraw the screen. With Color Commander, each change is accomplished in seconds, and the variety of color schemes are limited only by your imagination.

If you got carried away with yourself and created a color nightmare, you can easily restore the original colors by pressing the RESET switch and start over again.

Applications

Color Commander is being marketed primarily to the business arena through dealers and distributors. It is ideally suited for Architects, Apparel Designers, Corporate Advertising & Marketing Departments, CAE/CAD Engineers, Graphic Artists, Packaging Designers, Product Engineers, Programmers and Report Writers.

Color Commander will

continued on page 137

SIMPLE SOLUTIONS

Getting it down to basic routines that work!

The Futures In Computer Software Data Communications Package provides the software user with the capabilities to transfer data at rates close to those expected of the modem, with an advanced state-of-the-art error correction system. This package also offers the ability to provide concurrent execution of programs.

The FCS DOS Utilities provide the experimenter and the hobbyist with functional routines that are easily merged with application programs that the computer user is developing.

These programs are written in Intel 8086 Assembler, this being the major reason for its fast and efficient operation. The FCS Data Communication package has been designed to operate on any of the following microprocessor types: 8080, 8088, 8286, V20, and Z30.

FCS DATA COMMUNICATIONS PACKAGE

- initialization of communication ports
- reading and writing to and from peripherals via host computer
- verify status of peripherals on line via host computer
- uses X-on, X-off protocol or hardware handshaking
- full data check summing capabilities
- callable from Basic and Pascal languages
- for the IBM PC and Compatibles

FCS DOS UTILITIES

- conversion of keyboard cases
- automatically alphabetizes and sorts
- internal Calander
- callable from Basic and Pascal languages
- for the IBM PC and Compatibles

FCS MATH FUNCTIONS/SCIENTIFIC CALCULATOR

- multi-digit arithmetic
- square root functions
- conversion of integers to double precision vice versa
- callable from Basic and Pascal languages
- for the IBM PC and Compatibles

I WANT THE BASIC SOLUTION!
(with shipping and taxes included in the total price)

Please Send Me

SOURCE CODE INCLUDED

__Data Communications Package(s) $74.95 each
__FCS DOS Utilities $44.95 each
__The Set(s) Data Communications & DOS Utilities $94.95 for both
__Math Functions/Scientific Calculator FREE - When you purchase the Data Communications Package and the DOS Utilities - A $24.95 value.

TOTAL ENCLOSED $_____
☐ Payment Enclosed (check or money order)
☐ CHARGE ☐ MC ☐ VISA
Card No._____Exp._____

Name_____

Address_____

City_____State_____Zip_____

Phone _____

Signature_____

FUTURES IN COMPUTER SOFTWARE
P.O. Box 10308, Jacksonville, FL 32247 (904)636-8856

PC CAD
continued from page 132

and sections and adds additional notes and detail using the architectural drafting model.

Adopting the "total project cycle" approach, projects remain active on the system for longer periods of time and allow the design team immediate access to the building database and drawings. "Projects will reside on the system for 6-8 months," explains Schmidt, "One month for predesign, followed by 1½ months for schematic design, 3-4 months for construction doumentation and 1½ months for construction supervision."

Using a computer system for the design phase and the drafting phase has also required the firm to adopt a formal training program. Schmidt initially learned both the design and drafting software and began training other members of the firm. During the execution of the elementary school project, other members of the firm were introduced to the system at specific points in the design process.

Drafters with specialized skills are first introduced to the system when specific software applications need to be addressed. These specialists then are required to train another person in their area of expertise. The goal is eventually to have the entire office staff system literate.

Schmidt said no one in the office is being forced to use the computer. "People are encouraged to take advantage of its capabilities but only to the point where they feel comfortable," she said.

By using the system for design, it was unkown how the computer would be accepted in the design studio. One member of the firm, Schmidt said, kept watching the design model evolve on the system with great skepticism. Perspectives, plans and color images on the screen had no impaet. Finally, when the same images started rolling off the plotter, he became one of the system's strongest supporters.

Having the computer produce the drawing on paper was the key factor in his acceptance of the system. With the 3-D design model that automatically generates plans, elevations sections and perspectives, people expect the system to be able to do everything, including design. One of the most common comments from a person being trained is "doesn't it do that automatically?"

The first total project is now ending its documentation phase on the computer and Schmidt is looking toward the next project. By having limited computer resources, the number of projects that can be developed on the system for both design and drafting is restricted.

Said Schmidt, "We don't have any conclusions on the 'total design and drafting approach' vs. the 'drafting only' approach. We want to do two more complete projects from design through documentation and then we will decide if modifications should be made."

The Personal Architect's 3-D design capability has provided more recognition of the firm's design capabilities. "One of the most striking benefits in using the system for design instead of just producing 2-D drawings is the ability to present more design alternatives to the client. Our desire to produce the best design possible for public clients that have strict design budgets makes the system's use in design very instrumental," Schmidt said.

Public sector clients are very conscious of CAD/D use in architectural offices and there is now a greater emphasis on not having CADD, but showing expertise in CAD/D implementation.

"We feel that our firm was late in getting into CAD/D," said Sandra Beattle, the firm's marketing representative. "Our clients really expect us to have it. We believe it will be more beneficial to show the client how we use CAD/D during the complete design and drafting process that will give us the competitive edge."

Heard & Associates plans to continue expanding computer system use for design and documentation. More projects will be taken through schematic design, design development and construction documentation phases on the computer. The next module that will be added to the CAD/D system will be a project accounting module that records CAD system time. ●

LEO ELECTRONICS, INC.
P.O. Box 11307 • Torrance, California 90510-1307
(213) 212-6133 • 800/421-9565
Telex: 291 986 LEO UR
FAX: (213) 212-6106

RAMS - ADDED MEMORY

4164-15	UP GRADE	$1.15	2708	$2.80	2764	$3.25
41256-12	UP GRADE	CALL	2716	$3.50	27128	$4,00
41256-15	UP GRADE	CALL	2732	$3.95	27256	$5.25
4128-15	FOR AT (PIGGY BACKS)	$4.00				

EPROMS

IBM PC/XT or CLONE
(USED ON 4.77 MHZ MOTHERBOARD)

8284	$4.35	8255-5	$3.50
8088	$4.95	8259-5	$5.50
8288	$6.75	8237-5	$6.75
8253-5	$3.50	765	$7.00

KIT = 1 EA OF ABOVE $29.95
$AVE - $AVE $12.35

FLOPPY DISK CONTROLLERS

R6765P-5 (Rockwell) ..... Handles 5-¼" $6.00
R6765P (Rockwell) ..... Handles 5-¼" - 8" $7.00
R6265P (Rockwell) ..... Handles 3-½" - 5¼" - 8" $8.25

MATH COPROCESSORS SPEED UP YOUR MATH PROCESSING UP TO 300%

8087	(5 MHZ)	FOR PC/XT	$115.00
8087-2	(8 MHZ)	FOR PC/XT	$150.00
80287-3	(6 MHZ)	FOR AT	$175.00
80287-8	(8 MHZ)	FOR AT	$299.00

REPLACEMENT FOR 8088/8086 SPEED UP YOUR COMPUTER WITH:

V20	(5 MHZ)	(8088)	$13.00
V20	(8 MHZ)	(8088)	$15.00
V30	(8 MHZ)	(8086)	$15.00

These chips replace the controller chip. All functions speed up 10 - 40%.

MONITORS

RGBI COLOR MONITOR - THOMSON
- 14 inch RGB color monitor
- 0.43/0.38 mm dot pitch for 640-pixel resolution
- sharp text and vivid color graphics
- front text switch gives option color - green - amber
- cable included

Model CM36432 ..... CALL
25 lbs.

MONITOR STAND

TILTS AND SWIVELS

..... $ 11.50
5 lbs.

CALL FOR BROCHURE & NEW PRODUCTS

We accept checks, VISA, Mastercard. Purchase orders from qualified firms and institutions. U.S. funds ONLY. California residents MUST add 6.5% tax. C.O.D. add $1.90. Shipping is UPS. Add $2.00 for ground — $5.00 for air up to 5 lbs. Call for over 5 lbs. All major manufacturers. All parts are 100% guaranteed. Pricing subject to change without notice. $10.00 minimum order.

EPROM PROGRAMER
FOR THE FUTURE
UPDATEABLE TO
32 MEG EPROMS

READS VERIFIES AND PROGRAMS: 2716, 32, 32A, 64, 64A, 128, 128A, 256, 512, 513, 010 (IBM ONLY), 011.

IBM PC
*NEW INTELLIGENT AVERAGING ALGORITHM. PROGRAMS 64A IN 14 SEC., 256 IN 1 MIN., 1 MEG (27010, 011) IN 3 MIN. 45 SEC. HALF SIZE CARD WITH EXTERNAL 40 PIN ZIF. CAN BE UPDATED TO 8 MEG EPROMS AND 32 MEG PAGE ADDRESSABLE EPROMS.
$129.95 + S & H

APPLE II, +, E
*NEW INTELLIGENT AVERAGING ALGORITHM. PROGRAMS 64A IN 21 SEC., 256 IN 1 MIN. 30 SEC. CAN BE UPDATED TO 32 MEG PAGE ADDRESSABLE EPROMS.
$92.50 + S & H

ALL CHIPS SOCKETED, VCC RAISED TO 6V DURING PROGRAMING. EASY EDITOR.
MENU DRIVEN SOFTWARE, NEEDHAM'S INTELLIGENT AVERAGING ALGORITHM, COMPLETE INSTRUCTIONS, 90 DAY WARRANTY, 10 DAY MONEY BACK GUARANTEE, QUANTITY DISCOUNT AVAILABLE.

NEEDHAM'S ELECTRONICS
1121 LAS PALMAS
SACRAMENTO, CA 95815

OR CALL
(916) 924-8037
MON.-FRI. 8 AM-5 PM PST

VISA ADD 4%

MADE IN U.S.A.
CA RES. ADD APPLICABLE TAX

*PROGRAMING TIMES MAY VARY DEPENDING UPON EPROM MANUFACTUER.

Color Commander continued from page 135

enable them to view their designs, product or creative renderings in many different color combinations without the time-consuming methods of redrawing the screen. Each color variation can be photographed quickly for reference or for presentation purposes.

When using a design program in high-resolution mode with hi-intensity white on a black background, the user can reverse these colors in order to have a black on white background image. This is not only a more natural image for schematic or archtectural designs, but it will be consistent with the printed version if you're using a plotter for hard copy.

The system is totally transparent to the computer and the RGB monitor and will not interfere with their normal functions.

Use Under Fire

Exasperating situations sometimes provide unexpected results. Two days before my Color Commander arrived, my new Zenith ZVM-133 RGB went on the fritz. After a quick, blinding flash, the internal gremlins would only display green text on a black background.

I had been using my Visual Commuter at the time and I had palpitations that the computer's color circuitry had gone awry. So I hooked up my Zenith Z-138 to the monitor and the same problem persisted.

But I connected Color Commander anyway. Curiously enough as soon as I flicked the unit into ACTIVE mode, all of my lost screen colors were restored, except for some black video tearing when I used the red color series.

When I discussed this with someone at Perma Power, I learned that the driver circuitry in Color Commander is powerful enough to drive several monitors at once, so a stronger video signal will be passed through a faulty component and restore the missing colors. This means that 3 to 4 RGB monitors can be daisy-chained off one computer for a multi-visual display at exhibitions and trade shows.

What's Inside

When I acquire any new computer or peripheral products, I can't resist the temptation to take it apart. Color Commander was no exception because I was anxious to see what kind of interesting gate array technology and custom graphic circuitry Perma Power had fused into their product. I was also curious to see what made the price tag of Color Commander a hefty $359.

Surprisingly enough, there were no proprietary integrated circuits—only a small PC board with 17 standard TTL chips, a handful of passive components, a voltage regulator, a couple of switches and connectors, and two PVC ribbon cables connected to the front panel.

It was, instead, a clever piece of engineering that made use of available components to create a product that allows the user artistic freedom to usurp the shortcomings of the IBM color graphics standard. I hope they sell a million and bring the price down to a more realistic level for the average home computerist.

Documentation

Since Color Commander is quite simple to set up and use, the only documentation is a small fold-out leaflet to explain the basics. The demo disk (usable with PC-DOS and MS-DOS versions 2.0 or higher) is fun and shows you how to make effective use of color changes.

Perma Power Electronics have been around for some years manufacturing a high-quality line of surge supressors and stand-by computer power supplies. They back Color Commander with a liberal one-year warranty. It will work with the IBM-PC/XT/AT series and all true compatibles.

Color Commander Unit

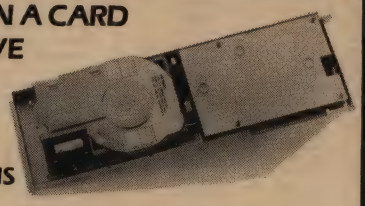
If you spot one in your local computer store running the demo disk, give it a play. You might find that you can't live without it. I can't.

For additional information, please contact: Perma Power Electronics, Inc., 5601 West Howard Avenue, Chicago, IL 60648 (312) 647-9414. ●

21 MEGABYTES

WINCHESTER ON A CARD
"C" OR "D" DRIVE

$455



NO MODIFICATIONS NECESSARY

21 Megabyte Hard Disk Storage for IBM PC or PC/XT and compatibles on an expansion card.

EASY TO INSTALL!

Full technical service and backed by a 1 year warranty direct from the manufacturer.

ALSO AVAILABLE:
- 20 TO 119 MEGABYTE INTERNAL KITS
- 300/1200 BAUD HALF-BOARD INTERNAL MODEM (HAYES COMPATIBLE)

CALL COLLEGE SOURCE
(818) 340-7552

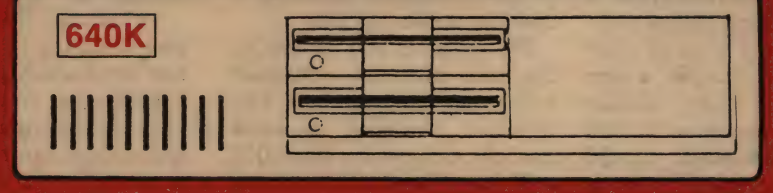
C.O.D. WELCOME

PC XT

$699

ASSEMBLED & TESTED (48 HRS)

CALL FOR DEALER PRICES.



FEATURES

640K 2-360K Drives Clock-cal.
RS 232 PORT-PARALLEL PORT-GAME PORT
RAM DISK-PRINT-SPOOLER-ENHANCED KEYBOARD

8 SLOT XT MOTHER BOARD — IBM™ XT COMPATABLE-8088 MICRO PROCESSER WITH 8087 SLOT-150 WATT POWER SUPPLY CAN HANDLE 2 HARD DRIVES-ENHANCED KEYBOARD WITH LIGHTED NUMBER AND CAPLOCKS.

RUN
FLIGHT SIMULATOR LOTUS dBASE
I.B.M. DIAGNOSTICS DOS 2.1 MS-DOS

AUTO DIAL/ANSWER MODEM
for I.B.M. and compatables
* ASCII Pro-EZ Software
* Power Supply
* 300 Baud
* Cable

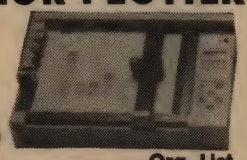
$39

3 PEN COLOR PLOTTER

Limited Qty.

CLOSE OUT

$199

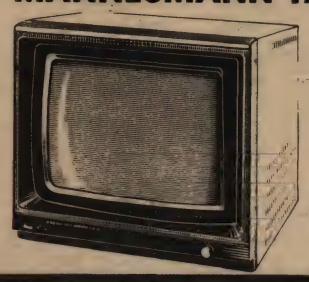


Org. List

PRINTER (EPSON COMPATABLE)
* Normal, enlarged, condensed
* Sprocket & friction feed
* Bidirectional
* Graphics
* 80 CPS

$149

MANNESMANN TALLY $595



AMBER MONITOR

(12") **$79**

20 MEG HARD DRIVE w/Controller & Cable $499
COLOR GRAPHIC CARD RGB & Composite..... $99

MARC BAER ASSOCIATES
1750 SKIPPACK PIKE, SUITE 309
BLUE BELL, PA 19422
PHONE (215) 279-7961 10 AM-6 PM EASTERN

BASMER and BASCMP Utilities for BASIC Programmers

by Richard Z. Ward

Have you ever forgotten what changes you had made to your BASIC source file or lost track of what additions and modifications you made to your BASIC program for a specific application? Would you like to compare two BASIC source files in a meaningful way? Would you like to merge BASIC modules by line numbers?

If you write programs in MicroSoft BASIC or GWBASIC on an IBM or compatible personal computer, the BASMER and BASCMP utilities will increase your productivity.

BASMER.COM Merge Utility

BASMER not only merges two BASIC (ASCII format) source files, but also sorts them. Thus, you may create a module consisting of lines to be inserted in any part of your program. For example, a very small module may contain lines of code numbered 10, 100 and 200. BASMER would merge the module with a primary file, for instance, consisting of thirty lines labeled in ascending order from 10 to 300. BASMER would merge the two files, adding the new and either writing over or adding and commenting the identically numbered lines.

BASMER has many useful applications. For instance, if you work on several versions of a program, you may find it useful to separate the sections that distinguish each version and save them in modules. In this way, you can merge a module with the main program in order to create a new version suited for a specific application or computer.

Moreover, once you have created these modules from the main program, you will find it easier and less time-consuming to modify the one main program, rather than the several slightly different versions. In short, updating a series of programs would become an easier and less confusing task.

However, if you renumber the main program, you must make the appropriate line number changes in each module. Otherwise, BASMER will insert lines in the wrong areas of the main program.

BASCMP.COM Compare Utility

BASCMP lists the differences between two BASIC source files. It marks the differences by line number, rather than by hexadecimal address. Thus, the output is both readable and understandable.

If you write many BASIC programs or are currently working on a large BASIC program, BASCMP will prove itself an invaluable tool: BASCMP has many useful and time-saving applications.

For example, if you write and sell software packages written in BASIC, you may find it useful to save the source code of each version supported in the market. BASCMP will quickly display differences between the individual versions. Thus, you can quickly and reliably update any version of your program.

Otherwise, if you just enjoy programming in BASIC, you can use BASCMP to compare a back-up to an updated copy of your program. BASCMP's useful print option allows you to send the output to a printer.

Technical Points

First, both BASMER and BASCMP place no limits on the size of its two BASIC source files. Both utilities are limited only by the available disk space.

Second, since BASMER and BASCMP are written in 8088 ASSEMBLY language, both run very quickly. For instance, it took BASMER less than twenty-five seconds to merge two thirty-five kilobyte BASIC source files. Most of the execution time is spent sending important messages to the screen or to a printer.

Third, although both BASMER and BASCMP have been designed to help the BASIC programmer, these utilities may be used to merge or compare other types of source files. The restrictions are that the file be stored in ASCII format, each line be numbered, and that the numbering be in ascending order.

Hardware Requirements

Both BASMER and BASCMP are designed to run on an IBM or compatible personal computer with a monochrome or color display, running under PC/MS-DOS versions 2.0 or later. A printer is not required, but is highly recommended.

How to Get More Information

For more information write: Richard Z. Ward, WARDCO, 868 Castle Falls Dr. NE, Atlanta, GA. 30329. To order copies of the BASMER.COM & BASCMP.COM utility programs with documentation, mail your request along with ten dollars ($10) to the above address.

Feed-Back

If you have taken advantage of this offer, please feel free to mail your opinions of the two programs BASMER.COM & BASCMP.COM to the above address. Also, if you have ordered these programs, you are entitled to free updates. ●

BE A COMPUTER SHOPPER MISSIONARY!

Write to CSM, P.O. Box F, Titusville, Florida 32781

CPU's & SUPPORT CHIPS
V20 14.95
Z80A CPU 1.75
Z80B CPU 4.50
Z80A CTC 1.95
Z80A DART 5.95
Z80A DMA 5.50
Z80A P10 1.95
Z80AS100 5.50
Z80BS100 9.95
82C43 2.75
AMD2901 4.00
6502 2.75
6522 3.50
6800 1.75
6802 4.50
6803L 8.00
6809 5.50
6810 1.75
6821 1.75
6845 4.50
6850 1.75
6875 4.50
D7220-1 12.00
8035 1.75
8048 5.00
8049 2.50
8080A 2.50
8085A 2.75
8086 8.00
8088 7.50
8155-2 2.75
8202 9.00
8203 16.00
8212 1.45
8214 3.75
8216 1.50
8224 2.25
8226 1.60
8237-5 6.50
8238 3.95
8250 6.75
8251-A 2.40
8253 1.75
8255A-5 1.85
8257 2.40
8259 2.40
8272A 4.75
8275 9.00
8279-5 3.40
8288 4.75
8355 12.95
8748 9.00
TMS9927NL 9.95
68000L8 10.00

RAM's
2016 1.50
21L02-3 .70
2101A-4 1.50
2111A 1.75
2112-1 1.95
2114-2 1.00
2118-4 1.75
2147-3 2.50
3242 6.00
TMS3409 1.75
MK4027-3 .90
TMS4050NL 1.75
MK4096-11 1.25
4108-3 1.60
4116-2 .70
4118-4 1.75
4164-15 1.50
41128-15 6.50
41256-15 3.50
MK4802 4.00
Z6104-4 2.50
6116-3 1.95
6167P-3 4.50
6264LP-15 4.50
8118-12 4.95
5280D 1.20

SHIFT REGISTERS
MM1402 1.75
MM1403 1.75
MM1404 1.75
MM5013 2.50
MM5055 2.50
MM5056 2.50
MM5057 2.50
MM5058 2.50
MM5060 2.50

INTERFACE
AY5-1013A 3.75
AY3-1015D 4.75
1488 .50
1489 .50
TR1602B 3.95
BR1941L 5.50
AY5-3600PRO 9.95
CRT5037 18.95
MM5307 7.95
MM5369 1.75
8810 2.00
8830 2.50
8833 2.50
8834 2.00
8837 2.00
MYPN2J4C 25.00

DIP SOCKETS
8 PIN .10 22 PIN .15
14 PIN .11 24 PIN .20
16 PIN .12 28 PIN .20
18 PIN .15 40 PIN .25
20 PIN .18

ROM's
INS2651 4.50
TPB18S42 3.50
82S126 1.95
82S130 1.95
82S131 1.50
TPB28S166 9.50
82S191 4.50
74S474 3.95
2708 3.75
2716 + 5V 3.75
2732A-3 3.75
2764-25 4.00
27128-25 3.40
27256-25 8.00
3341A 2.95
3628A-3 3.00
6331 1.95
8256-5 1.25
AM9214C 2.95

DISC Controllers
D765C 4.50
1771 4.75
1791 9.50
1793 9.50
1795 12.00
1797 12.00
2797 7.95

CRYSTALS
1.843 6.000
2.000 6.144
3.000 8.000
3.579 10.000
4.000 18.000
5.000 18.432
20.000
1.75 ea.

TOGGLE SWITCHES
106D–SPDT– 1.00
206D–DPDT– 1.40
206P–DPDT– 1.60
Center Off

NO. 30 WIRE WRAP WIRE SINGLE STRAND
100'...$1.40

WIRE WRAP SOCKETS
14 PIN .45
16 PIN .50
18 PIN .65
20 PIN .90
24 PIN 1.10
28 PIN 1.25
40 PIN 1.80

DB CONNECTOR
DB9P - $ .80
DB9S - $ .95
HOODS - $ .65
DB25P - $1.25
DB25S - $1.50
HOODS - $ .65

TRANSISTOR SPECIAL
TIP 31B NPN Si TO-220 . . $ .40
TIP 32B PNP Si TO-220 . . $ .40
TIP 34 PNP Si . . . . . $ .95
TIP 111 . . . . . $ .50
TIP 121 NPN Si U84 . . . . $ .60
TIP 141 NPN Si U97 . . . . $1.00
TIP 145 . . . . . $1.35
BU205 . . . . . $1.75
2N404A PNP GE TO-5 . . 3/$1.00
2N1307 PNP GE TO-5 . . . $ .40
DPS2000–DUAL POWER DARL. $3.95
2N2222 NPN Si TO-92 . . 7/$1.00
2N2907 PNP Si TO-92 . . 7/$1.00
TIP 2955 PNP Si . . . . . $ .70
2N3055 NPN Si TO-3 . . . $ .60
MJE3055T . . . . . $ .60
2N3904 NPN Si TO-92 . . 7/$1.00
2N3906 PNP Si TO-92 . . 7/$1.00
2N4908 PNP Si TO-3 . . . . $1.00
2N6109 PNP Si TO-220 . . $ .55
MJE13009A 400V NPN . . $1.00
MRF-8004 CM RF TRANSISTOR NPN . . . $ .75
HEP G8014–PNP GE TO-3 . $ .85

TTL IC SERIES
7400 .19 7480 .45 74170 1.50
7401 .19 7483 .50 74173 .75
7402 .19 7485 .55 74174 .85
7403 .19 7486 .35 74175 .85
7404 .19 7489 1.90 74176 .75
7405 .25 7490 .39 74177 .65
7406 .27 7491 .40 74180 .75
7407 .27 7492 .50 74181 2.00
7408 .24 7493 .35 74182 .75
7409 .18 7494 .60 74184 1.50
7410 .18 7495 .55 74190 .80
7411 .25 7496 .60 74191 .80
7412 .25 7497 1.30 74192 .75
7413 .35 74116 1.20 74193 .75
7414 .45 74121 .30 74194 .80
7416 .25 74122 .45 74195 .80
7417 .25 74123 .45 74196 .75
7420 .20 74125 .45 74197 .80
7425 .27 74126 .45 74199 1.25
7426 .30 74145 .60 74221 1.25
7427 .27 74148 1.20 74273 1.00
7430 .20 74150 1.35 74278 1.95
7432 .27 74151 .55 74279 .70
7437 .27 74153 .55 74298 .60
7438 .29 74154 1.25 74365 .65
7440 .20 74155 .55 74367 .65
7442 .45 74156 .75 74390 .90
7445 .65 74157 .55 75114 .90
7448 .70 74158 .60 75115 .90
7450 .20 74160 .85 75325 1.50
7472 .29 74161 .65 75491 1.00
7473 .35 74162 .65 9601 1.00
7474 .32 74163 .65 9602 .90
7475 .45 74164 .85 8T26 1.10
7476 .50 74165 .85 8T28 1.10
74166 1.00 8T97 1.10
8T98 1.10

SCR's

	1.5A	6A	35A	110A
100	.35	.40	1.40	
200	.40	.50	1.80	
400	.60	.70	2.40	12.00
600	.80	1.00	3.60	15.00

TRIAC's

PRV	1A	10A	25A
100	.35	.60	1.40
200	.50	.80	1.90
400	.70	1.00	2.60
600	1.00	1.20	3.60

LINEAR CIRCUITS
DAC08EQ 3.75
TL062CP .95
TL064CN 1.50
TL072 1.00
TL082 .90
TL084 1.30
LM201 .75
LM301/748 .35
LM307 .45
LM308 .65
LM310 1.10
LM311 .55
LM318 1.25
LM319 1.10
LM324 .45
LM339 .90
LM348 .85
LF351 .60
LF353 .90
LF355 .90
LF356 1.00
LM358 .55
LM370 1.60
LM380 .85
LM384 1.60
LM386 .85
LM387 1.25
LM393 .40
LF398A 3.00
AD506JH 2.50
AD521JD 4.95
LM555 .34
LM556 .45
558 1.25
564 1.75
565 .90
566 1.25
567 .75
NE592 .95
709CH .80
711CH .60
733 .95
741CV .29
747 .50
LM798CT .60
DAC0800 2.95
LM1310 1.40
MC1355 .70
MC1391 1.00
1456 .80
1458 .50
LM1808 1.75
AD7200LD 4.95
LM2901 .95
CA3018 1.95
CA3045 1.20
CA3078AT 1.50
CA3080 .85
CA3089E 1.75
CA3094 1.30
CA3130 .90
CA3140 .75
SG3543 .70
SG3544 1.00
CA3822 .75
LM3900 .45
LM3909 .80
4136 .85
SD5000 1.75
N5534 1.00
N5596A 1.50
SD6000 1.00
8038 3.95
8700CJ 5.95
LM13080 .95

C/MOS
74C00 .25 74C915 1.10 4027 .35 4072 .20
74C02 .25 74C921 3.50 4028 .65 4076 .55
74C04 .25 4001 .19 4029 .65 4077 .28
74C08 .25 4002 .20 4030 .35 4081 .20
74C10 .25 4006 .65 4034 1.40 4082 .20
74C14 .55 4007 .20 4035 .65 4093 .45
74C20 .25 4008 .85 4040 .65 4099 1.40
74C32 .35 4009 .35 4041 .75 4501 .96
74C42 1.10 4010 .35 4042 .55 4503 .45
74C74 .55 4011 .19 4043 .85 4506 .75
74C76 .60 4012 .25 4044 .65 4510 .65
74C83 1.20 4013 .35 4045 .85 4511 .65
74C85 1.25 4014 .65 4046 .85 4512 .75
74C86 .35 4015 .28 4047 .65 4514 .95
74C93 1.00 4016 .28 4049 .28 4515 1.60
74C154 3.00 4017 .45 4050 .28 4516 .75
74C157 .95 4018 .65 4051 .65 4518 .85
74C161 .95 4019 .35 4052 .65 4520 .75
74C174 .95 4020 .55 4053 .65 4528 .75
74C175 .95 4021 .65 4060 .65 4529 1.40
74C245 1.75 4022 .65 4066 .28 4538 .95
74C901 .35 4023 .25 4068 .35 4539 1.50
74C902 .40 4024 .48 4069 .19 4541B 1.20
74C903 .80 4025 .25 4070 .28 4553 1.75
74C907 .75 4026 1.25 4071 .20 4583 .90
4585 .75

PLEASE CALL FOR QUANTITY PRICING

74S SERIES
74S00 .25 74S85 .90 74S165 1.50
74S02 .29 74S86 .35 74S174 .75
74S03 .29 74S89 2.00 74S175 .75
74S04 .29 74S112 .50 74S181 3.00
74S05 .29 74S113 .50 74S182 2.00
74S08 .35 74S124 2.20 74S189 1.60
74S09 .40 74S133 .45 74S194 1.30
74S10 .29 74S135 .85 74S195 1.30
74S11 .35 74S138 .75 74S240 1.40
74S15 .35 74S139 .75 74S241 1.40
74S20 .29 74S140 .50 74S244 1.25
74S30 .29 74S151 .75 74S251 .75
74S32 .35 74S153 .75 74S257 .90
74S40 .29 74S157 .75 74S260 .75
74S42 .85 74S158 .90 74S373 1.65
74S51 .35 74S161 1.25 74S374 1.65
74S74 .45 74S163 1.25

74LS SERIES
74LS00 .17 74LS112 .29 74LS241 .65
74LS01 .17 74LS113 .33 74LS242 .65
74LS02 .17 74LS114 .33 74LS243 .65
74LS03 .17 74LS123 .45 74LS244 .65
74LS04 .17 74LS125 .35 74LS245 .75
74LS05 .17 74LS126 .35 74LS246 1.40
74LS08 .17 74LS132 .39 74LS247 .75
74LS09 .17 74LS136 .35 74LS248 .65
74LS10 .17 74LS137 .90 74LS251 .45
74LS11 .20 74LS138 .39 74LS253 .45
74LS12 .27 74LS139 .39 74LS257 .39
74LS13 .25 74LS145 .70 74LS258 .45
74LS14 .36 74LS147 1.00 74LS259 1.20
74LS15 .25 74LS148 .90 74LS260 .45
74LS20 .17 74LS151 .39 74LS266 .55
74LS21 .22 74LS153 .39 74LS273 .75
74LS22 .22 74LS154 1.50 74LS279 .39
74LS26 .23 74LS155 .55 74LS280 1.70
74LS27 .23 74LS156 .45 74LS283 .55
74LS28 .26 74LS157 .35 74LS290 .80
74LS30 .17 74LS158 .20 74LS293 .80
74LS32 .17 74LS160 .29 74LS298 .65
74LS37 .26 74LS161 .49 74LS320 2.00
74LS38 .26 74LS162 .49 74LS322 3.00
74LS40 .17 74LS163 .49 74LS323 2.40
74LS42 .35 74LS164 .45 74LS365 .39
74LS48 .65 74LS165 .65 74LS366 .39
74LS51 .17 74LS166 .95 74LS367 .39
74LS54 .22 74LS169 .90 74LS368 .39
74LS73 .25 74LS170 .80 74LS373 .75
74LS74 .24 74LS173 .49 74LS374 .75
74LS75 .29 74LS174 .39 74LS377 .75
74LS76 .29 74LS175 .39 74LS386 .45
74LS83 .45 74LS181 1.40 74LS390 1.10
74LS85 .45 74LS190 .49 74LS393 .75
74LS86 .22 74LS191 .49 74LS398 2.50
74LS90 .39 74LS192 .65 74LS446 2.00
74LS92 .45 74LS193 .65 74LS541 1.40
74LS93 .45 74LS194 .65 74LS625 1.75
74LS95 .48 74LS195 .65 74LS645 .95
74LS96 .49 74LS196 .55 74LS668 1.45
74LS107 .35 74LS197 .55 74LS670 .95
74LS109 .35 74LS221 .55 81LS98 1.40
74LS240 .65

74HC00 .35 74HC138 .50
74HC04 .35 74HC273 1.25
74HC74 .44

TANTULUM CAPACITORS

.22UF 35V	5/$1.00	15UF 16V	3/$1.00
.47UF 35V	5/$1.00	22UF 10V	$ .30
.68UF 35V	5/$1.00	30UF 6V	5/$1.00
1UF 20V	5/$1.00	33UF 15V	$ .50
2.2UF 20V	5/$1.00	47UF 20V	$ .85
3.3UF 20V	4/$1.00	68UF 20V	$1.00
4.7UF 20V	4/$1.00	150UF 16V	$1.30
6.8UF 20V	4/$1.00	200UF 20V	$1.75
10UF 20V	$ .40	330UF 10V	$1.75

DISC CAPACITORS
.1UF 16V .10/$1.00 . . .100/$8.00
.01UF 35V . . .16/$1.00 . . .100/$5.00

IN4148 (IN914) 15/1.00

REGULATORS
78L05 or 12 $ .30 LM338K $3.75
309 K $1.25 340T 5,6,8, 9,12,15, 18 or 24V $ .45
LM317T $ .90
320T 5,12,15 or 24 $ .55 723 $ .45
78M5, 12 or 15 $ .40 LAS39U 5.95
323K (LA1405) $2.95 LAS1412 + 12V3A $3.95

L1411-IR Detector . . . . . 3/$1.00
FP 100 Photo Trans . . . . . $ .50
Red LED's .2" . . . . . 10/$1.00
Yel, Gr, or Amber Lg LED's .2" . . . . . 8/$1.00
Red-Green Bipolar LED . . . . . $ .90
Red-Yellow Bipolar LED . . . . . $ .90
MLED92 IR LED . . . . . $ .40
MRD148 Photo Darl. XTOR . . . . . $ .60
IL-5 Opto Isolators . . . . . $ .60

12V DC RELAYS TTL SIZE
S.P. 400 ohm coil .75
D.P. 400 ohm coil .95

PRINTED CIRCUIT BOARD
4" x 6" DOUBLE SIDED EPOXY BOARDED 1/16" THICK
$.60 ea . . . . . 5/$2.60

FULL WAVE BRIDGE

PRV	2A	6A	25A
100			1.40
200	.80	1.30	2.20
400	1.00	1.65	3.30
600	1.30	1.90	4.40

20KV DIODES $1.95
250 ma.

DIP SWITCHES
CTS 206-4 4 Position .75
CTS 206-7 7 Position .95
CTS 206-8 8 Position .95
CTS 206-10 10 Position 1.25

SILICON POWER RECTIFIERS

PRV	1A	3A	12A	50A	125A	240A
100	.05	.14	.35	.90	5.50	6.50
200	.06	.17	.50	1.30	7.00	9.00
400	.09	.25	.65	1.50	10.00	12.00
600	.11	.30	.80	2.00	13.00	15.00
800	.13	.35	1.00	2.50	16.00	18.00
1000	.20	.45	1.25	3.00	20.00	26.00

MULTI TURN TRIM POTS
50 OHM
100 OHM
1000 OHM
5K, 10K
20K 100K
3/$2.00

POSTAGE RATES
ADD 10% FOR ORDERS UNDER $25.00
ADD 5% FOR ORDERS BETWEEN $25.00 AND $50.00
ADD 3% FOR ORDERS ABOVE $50.00

TERMS: FOB CAMBRIDGE, MASS. SEND CHECK OR MONEY ORDER.
MINIMUM TELEPHONE, C.O.D. PURCHASE ORDER OR CHARGE $20.00.
MINIMUM MAIL ORDER $5.00.

SEND $.25 FOR OUR CATALOG FEATURING TRANSISTORS & RECTIFIERS
145 HAMPSHIRE ST., CAMBRIDGE, MASS. 02139

SOLID STATE SALES
P.O. BOX 74 B - SOMERVILLE, MASS. 02143

TEL. (617) 547-7053
TOLL FREE 1-800-343-5230
FOR ORDERS ONLY

WE SHIP OVER 95% OF OUR ORDERS WITHIN 24 HOURS OF RECEIPT

C-128 Info continued from page 75

Dear Cheryl:

I usually don't react or comment on product reviews, but your recent article in the July issue of *Computer Shopper* caught my eye.

Commodore 128 Internals/1571 Internals: We estimate that there are already more than 600,000 C-128 owners. The audience for this book is identical to the audience for our Anatomy of the Commodore 64/1541 Disk Drive—the serious 128 user (hacker) and software developer. This represents about 10% of these owners. From their feedback, they tell us that one of the main reasons for buying the book is the comprehensive, commented ROM listing. And at $10 for the ROM listing, we have never heard an individual say that it is a waste.

CP/M User's Guide: Naturally we don't want to insult any of our readers, but how do we know his knowledge level?

Tricks and Tips: Our sources tell us that many people still use the infamous Datasette.

I believe that the readers of *Computer Shopper* can benefit most from an objective rather than subjective description of a book's contents. I understand that you may not have use for the ROM listings, but the tone of your article implies that no one in their right mind should buy these books. The fact is both '128 Internals and 1571 Internals are among our top five best sellers. And the buyer is the ultimate judge of a product's usefulness.

In the past, I have found your articles and reviews to be objective. In this particular case, I feel that you have made a departure from your established way of writing. Please feel free to contact me if the need arises.

Yours truly,
Arnie Lee

I will resist the temptation to reply to each comment and just say that while I do include non-CP/M specific material in my column, I try to analyze that information from the point of view of someone who wants to use CP/M and I look at it from the point of view of someone who has been using CP/M for over four years. I'm sorry if my comments seemed unfair. While many folks may be buying the books, with the exception of this letter, I've received no complaints about my objectivity.

I do have a unique perspective of the computer industry and those who buy its products. In this column, I try to speak to a certain segment of those consumers, the 128 owners who are curious about CP/M. I see my writing as a way of directing people to those goods and services that will most help them to be happy with their computer. In order to address specific users, I do get subjective. When making such comments though, I try to be specific about who will benefit most from a product.

And yes, I express MY opinion.

Another Abacus Book

I recently received *Peeks and Pokes for the Commodore 128* from Abacus Software. It starts out simply and takes a friendly, helpful approach. The author seems to assume the reader has a basic understanding of BASIC programming and proceeds from there. There are lots of good explanations, program listings and examples. I found it very informative. There is some CP/M specific information, despite the fact that you can't really do peeks and pokes from CP/M. For those interested in programming there is some good material here.

Fortran for CP/M??

Paul Matteopoulos an engineering student from Woodside NY writes to ask if I know of a Fortran compiler available that might run on the 128 under CP/M. He specified that he's most interested in Fortran-77 or Fortran IV.

Ellis Computing has offered a group of languages that run under CP/M for many years. While one of these is Fortran, I thought I should check and see if they had more information on whether these would run with the 128. Chuck Ellis told me that they met early orders by sending the Kaypro II or Osborne 1 versions of the program, but the buyers had problems getting the packages to work properly. He said that since then they've been shipping the Kaypro IV versions and the customers have been satisfied. Since Ellis offers a money-back guarantee, this is a pretty good endorsement of their product.

Not being familiar with all the incarnations of Fortran, I asked him about their particular implementation and Ellis says that it meets the Fortran IV standards with some extensions toward Fortran-77.

Ellis Computing offers their software for $39.95 per language, but for the Kaypro IV conversion they are asking an additional $10. The disk is not copy-protected. Besides Fortran, Ellis offers COBOL, Pascal, BASIC and PILOT.

Paul, thanks for the nice letter.

Ellis Computing, Inc. Nevada Fortran $49.95, 5655 Riggins Court, Suite 10, Reno, NV 89502; 702-827-3030.

Timeworks, Partner 128, C-64 version $59.95. C-129 version $69.95, 444 Lake Cook Road, Deerfield, IL 60015; 312-948-9200.

Abacus Software, *C-128 Peeks and Pokes* $16.95, P.O. Box 7219, Grand Rapids, MI 49510; 616-241-5510.

Commodore Business Machines, 1200 Wilson Drive, West Chester, PA 19380; 215-431-9100.

Reader Response

Dear Ms. Peterson,

As an avid user of GEOS for the Commodore 64, I enjoyed your review of it in the August issue of *Computer Shopper.* However, I would like to offer a couple of comments.

First, you point out that the 64 doesn't come with a mouse and that you need a joystick instead to control GEOS. The Commodore 1350 mouse offered for the 128 works just fine with GEOS on a 64. One important advantage is that the mouse can be operated with one hand whereas most joysticks require both hands.

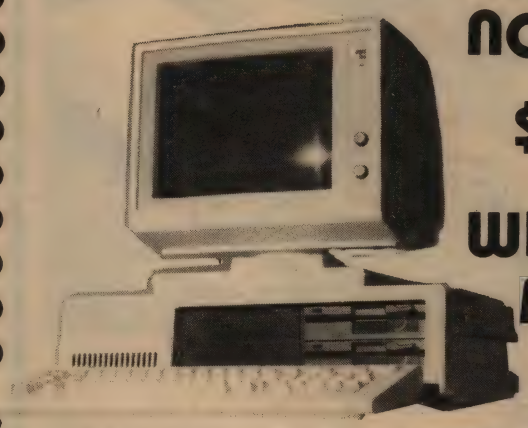
Second, you chide Berkeley Softworks because, "No backup disk is provided or offered." It's true that Berkeley doesn't have a *stated* backup disk policy but, in actual practice, they will replace a defective disk, even if the defect is the user's own fault.

I know, because they did it for me. When I received my copy of Version 1.2 of GEOS, I sat down to make some work

continued on page 223

THIS PC RUNS MAJOR PC/XT/AT SOFTWARE !!!

THE TURBO LVXT-2
30 MB HARD DISK!
NOW, ONLY
$1495
WITH A 15-DAY
MONEY BACK
GUARANTEE!



WHY PAY MORE FOR AN AT COMPATIBLE?

The **LVXT-2** is a complete operational system which is IBM PC-XT compatible. It's distributed by LEVEDI MICRO-SYSTEMS which backs up its products with expert support and quality service.

LVXT-2 features:

- o **640K** RAM Turbo motherboard with 8 slots
- o **Dual** 360K floppy diskette drives
- o **30 MB** Hard Disk (Seagate)
- o **TTL** monochrome monitor **(high res)**
- o **AT** keyboard
- o **DOS 3.1**
- o **FREE** box of 10 diskettes
- o **One Year** warranty

Options:

o With 20 MB hard disk	**$1395 ONLY**
o Basic system with floppy disk	**$ 795 ONLY**
o Tape drive for 10/20 MB drive	**$ 520 ONLY**
o Bare bone **Turbo-System** w/o monitor	**$ 529 ONLY**

TO ORDER:

o Send check or money order o Add 5% freight and handling o CA residents, add 6½% sales tax o COD orders welcome o Corporate accounts welcome

LEVEDI micro — systems
1200 South Brand Boulevard
Suite #3
Glendale, California 91204
Telephone: (213) 391-8695

MICRO WAREHOUSE

We bring the warehouse to you!

One stop shopping...

IF YOU DON'T SEE WHAT YOU WANT, CALL!! ONE STOP SHOPPING

PRINTERS

STAR MICRONICS
SD-10 160 CPS $290.00
SD-15 160 CPS $480.00
SR-15 200 CPS $585.00
NX-10 120 CPS $239.00
POWER TYPE LETTER QUAL. $289.00

EPSON
FX-85 ..... BEST
FX-286 ..... PRICES
LQ-800 ..... PLEASE
LQ-1000 ..... CALL

OLYMPIA
NP DOT MATRIX 165 CPS $225.00
RO LETTER QUAL $240.00
COMPACT 2 TYPE/PRINTER $345.00

MICRO WILLIE SAYS
"IF YOU DON'T SEE IT, ASK FOR IT! . . . "

IBM COMPATIBLE COMPUTER

FCC APPROVED!
8 Mhz TURBO XT W/DOS!!

MW-XT DUAL DRIVE SYSTEM
640K, SERIAL/PARALLEL, CLOCK/CALENDAR W/BATTERY, MONOCHROME MONITOR, GAME PORT, MONOCHROME ADAPTER .. $ 995.00

MW-XT HARD DISK SYSTEM
SAME AS ABOVE PLUS 20MB HARD DISK W/CONTROLLER $1450.00

ALL SYSTEMS COMPLETE AND TESTED 1 YEAR WARRANTY WE CAN CONFIGURE OUR MW-XT TO YOUR CUSTOM SPECIFICATIONS

TRIPP LITE

SURGE/SPIKE SUPPRESSORS — EMERGENCY POWER SYSTEMS
BROWN-OUT PROTECTORS/LINE CONDITIONERS

MONITORS

TATUNG

1360 13" HIGH-RES RGB (640 x 200) W/GREEN, AMBER $395.00
1370 13" SUPER HI-RES RGB (720 x 400) $490.00
1380 ENHANCED GRAPHICS MULTI-SYNC W/GRN & AMB. $495.00
1322 (DISCONTINUED)

SAMSUNG

1239-A AMBER TTL (IBM) .... $ 98.00
1239-G GREEN TTL (IBM) ..... $ 95.00
1255-A AMBER COMPOSITE ... $ 78.00
1255-G GREEN COMPOSITE ... $ 75.00
1451-H 80-COLUMN COMPOSITE COLOR ... $215.00
1251-M 12" HI-RES RGB (640 x 240) $275.00
1452-M 14" HI-RES RGB (640 x 240) $280.00
1251-H 12" SUPER HI-RES RGB (720 x 295) $295.00
1452-H 14" SUPER HI-RES RGB (720 x 240) $310.00

COMPUTER POWER ACCESSORIES

EMERGENCY POWER SYSTEMS

BC-200-10	200W	10 Amp. Hr for PC	$245.00
BC-200-28	200W	28 Amp. Hr for PC	$299.00
BC-425	425W	30 Amp. Hr for XT w/Alarm	$415.00
BC-675	675W	40 Amp. Hr for AT w/Alarm	$590.00
BC-1000	1000W	60 Amp. Hr Multiple PC's w/Alarm	$885.00

NEW! **COMMAND CONSOLE**
MONITOR BASE UNIT 6-OUTLET, 12' CORD, LIGHTED SWITCHES, 15 AMP BREAKER, TRIPP-LITE PROTECTION $89.00

LINE FILTER, SURGE/SPIKE SUPPRESSORS

Model No.	Outlets	Cord	Features	
IBAR 2-6	2	6'	1 Isobar filter	$ 39.00
IBAR 4-6	4	6'	2 Individual Isobar filters	$ 49.00
IBAR 8-15	8	12'	4 Individual Isobar filters	$ 59.00

BROWN-OUT PROTECTORS/ LINE CONDITIONERS

LC-1200	4	10 amps Isobar Protection	$149.00
LC-1800	6	15 amps Isobar Protection Line Monitor Lights	$199.00

MICRO WILLIE SAYS
"SHOP SMART SHOP MICRO WAREHOUSE . . ."

SEAGATE 20MB $399.
W/Western Digital 30MB $499.

Seagate

BLANK DISKETTES 65¢

NAME BRAND - LIFETIME GUARANTEE

DS-DD LOTS OF 100 ..... $65.00
W/LABELS & WRITE PROTECTION $70.00
BOX OF 10 ..... $ 8.50

FREE!! "FLIP 'N FILE" STORAGE CASE WITH ANY MINIMUM PURCHASE!
MULTI-COLOR DISKS AVAILABLE

DISK AND TAPE DRIVES

TAPE BACKUP SYSTEMS
TEAC ½ HT INT. 20MB W/CONT. .. $575.00
WANGTEK ½ HT INT. 60MB W/CONT. $795.00
TEAC 5¼" 360KB DRIVE XT ..... $ 95.00
TEAC 5¼" 360KB DRIVE AT ..... $ 99.00
WELTEK 5¼" 360KB DRIVE XT ... $ 85.00
WELTEK 5¼" 360KB DRIVE AT .. $ 89.00

EXTERNAL DRIVE ENCLOSURE
W/40 WATT POWER SUPPLY $195.00

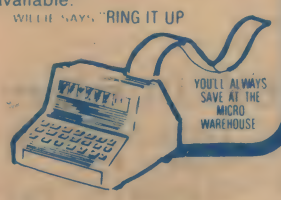
ORDERING INFORMATION

MasterCard — VISA

All orders are COD or prepaid VISA/Mastercard, American Express, Company or personal check. COD orders require cash, certified check, or money order. In stock COD & credit card orders shipped within 24 hours. Personal or company check prepaid orders shipped 10 days after receipt of check. New York residents add applicable sales tax. Shipping and Handling COD charges (where applicable) and insurance added to all orders. All orders shipped UPS ground unless otherwise requested. UPS Second-Day and Next-Day Service available.

- Purchase orders and dealer inquiries welcomed
- All products carry manufacturer's warranty
- All initially defective merchandise will gladly be replaced

WILLIE SAYS: RING IT UP



DON'T FORGET
WE HAVE DAC SOFTWARE!
DAC EASY ACCOUNTING— AP, AR, GL, INV, FORECAST, PO, OE $59.95
DAC EASY WORD PROCESSOR— W/80,000 WORD DICTIONARY $39.95
DAC EASY PAYROLL— BEFORE/AFTER TAX, MORE! $39.95

CALL ORDERS/INFORMATION
OUTSIDE N.Y. TOLL FREE
800-428-0040
IN N.Y. CALL 516-293-3516

MAIL PRE-PAYMENTS AND PURCHASE ORDERS TO MICRO WAREHOUSE, P.O. BOX 515, EAST NORTHPORT, NY 11731

© 1985 MICRO WAREHOUSE, NEW YORK

The Amiga Workbench continued from page 75

the joystick easiest, perhaps because of reflexes honed during many hours of playing with PATROL's predecessor.

Along with the proven play value of an oldie-but-goodie, there is price to be considered: at a list price of $19.99, DELTA PATROL won't cripple anybody's pocketbook. Available from Other Valley Software at 976 Foothill Blvd. Ste. 490, Claremont, CA 91711. Requirements are an Amiga with 512k.

It could even be that there is a resurgence of games for the Amiga, for this month we also found Winnie the Pooh AND TIGGER TOO...in a childrens game from Sierra called (take a deep breath) WALT DISNEY'S WINNIE THE POOH IN THE HUNDRED ACRE WOOD.

The scenario is simple, as befits a game aimed at children of ages 7 and up: a blustery wind has blown through the Hundred Acre Wood, scattering personal belongings everywhere. As the character of Winnie, it is up to you to find all the scattered items and return them to your friends who live in the wood.

Christopher Robin is here, as are Eeyore, Tigger, Owl, Kanga, Roo and all the rest—and though the graphics don't look as though they test the limits of the Amiga, they are quite good and clear. It is too bad that the company that gave us the excellent animation of King's Quest for the IBM chooses here to make do with a series of still pictures.

Like a text adventure game, POOH requires that choices be made and that you journey through many "rooms." Choices are made easy through mouse control—to pick one of four directions, simply click on the proper point of the simplified compass at lower left of the screen. The directions open to you at any given time are displayed in boldface, while these not available are shadowed, making the choices easier for young minds. At lower right are four commonly used action verbs, those active at the moment in boldface, the inactive shadowed.

When a real choice confronts you, such as whether to count the trees or to wonder whether it's time for lunch, these are presented in the form of a pop-up requester window with multiple choices. Click on the one you wish to try and a further pop-up window will show the results of your choice.

As fare for the younger set, WINNIE THE POOH, ETC should be entertaining (you can listen to the Tigger Song as many times as you want) as well as educational:

To aid you in your search, there is a map of the hundred acre wood showing the thirty "rooms" of the game in pictures so that you may compare what you see on the screen with what you see on the map to get your bearings. Aside from this, however, youngsters are urged to draw their own maps showing what was found in each of the rooms. Besides learning map skills, POOH should also reinforce reading and logic skills.

And, if the puzzle can't be completed in one session, the child may return to the playroom and store his game in the (where else?) toy box.

The documentation consists of a story that sets the scene for the game play and, toward the back of the slim book, a few "rainy-day" type activities for youngsters. In between, you'll find loading and playing instructions for the Apple II and the Commodore 64 computers. Go back to the package, look under the warranty card and you'll find a reference card pertaining to the Amiga.

I only wish they had used speech synthesis or digitized sound, for I miss hearing Tigger sing his song.

WINNIE THE POOH is available from Sierra On-Line, Inc. Coarsegold, CA 93614. Suggested list price is $29.95 and the system requirement is 256k.

continued on page 142

SEFCO®

Computer Products

FEATURES JAPANESE MOTHERBOARD

- 640K RAM, 8088 MICROPROCESSOR
- (2) 360K FLOPPY DRIVES DS/DD
- 150 WATT POWER SUPPLY • CASE
- AT STYLE OR 5151 KEYBOARD
- MONO OR COLOR GRAPHIC CARD
- DISK I/O (CONTROLLER, S, P, G PORTS, CLOCK)

FEATURES ZERO WAIT STATE

- 1MB RAM, 6/8 MHZ, 80286 CPU
- (1) 1.2MB FLOPPY DRIVE
- 200 WATT POWER SUPPLY • CASE
- HARD & FLOPPY CONTROLLER
- MONO OR COLOR GRAPHIC CARD
- SERIAL & PARALLEL PORT • AT KEYBOARD

*TURBO UP GRADE INCLUDES 8088-2 CPU & NEW BIOS

OPTIONS: XT (CALL FOR PRICES)

- 20MB SEAGATE HD WITH CONTROLLER
- 20MB RODINE FULL-HEIGHT HD WITH CONTROLLER
- AMBER OR GREEN (TTL) MONITOR
- COLOR (RGB) MONITOR

OPTIONS: AT (CALL FOR PRICES)

- 20MB HIGH SPEED FULL HEIGHT DISK DRIVE
- 30MB HIGH SPEED FULL HEIGHT DISK DRIVE
- 40MB HIGH SPEED FULL HEIGHT DISK DRIVE
- AMBER OR GREEN (TTL) MONITOR
- COLOR (RGB) MONITOR

XT/AT ADD-ONS: MADE IN JAPAN

EGA CARD FOR XT/AT	$249.00
2MB MEMORY EXPANSION BOARD	169.00
GAME PORT (2 PORTS)	25.00
640K RAM CARD FOR XT ØK	38.00
INTERNAL 300/1200 BAUD MODEM	150.00

MOTHER BOARDS: WITH BIOS & CPU

XT 640K MAINBOARD ØK	$115.00
XT 640K TURBO 8088-2 ØK	130.00
AT 1MB MAINBOARD ØK (6/8 MHZ, ZERO WAIT STATES)	550.00
AT/XT KEYBOARD TACTILE TOUCH	80.00

SEFCO COMPUTERS ARE FCC APPROVED. OUR SYSTEMS ARE MANUFACTURED IN THE USA AND COME WITH A FULL 1 YEAR WARRANTY, PARTS & LABOR.

OEM & DEALER INQUIRIES INVITED

PRIVATE LABELING AVAILABLE

818·781·6557 213·205·0828 FAX·818 989·0778

14349 VICTORY BLVD. SUITE 301 VAN NUYS, CA 91401·1950

Amiga Workbench
continued from page 141

Also newly available this month is ART DISK 2 from Electronic Arts. You received Art Disk 1 when you purchased Deluxe Print and with DISK 2 your library of images, and thus your creative capabilities, have been greatly expanded.

Over 180 images in fourteen categories are added. Famous Sites gives you the Statue of Liberty and the St. Louis Arch, among others. Speak Bubbles add "Pow," "Zap," "Wham," "Ouch" and "Blam". (If you haven't read enough comic books to know the difference between Wham and Blam, you might as well forget it.)

Other categories include Fantasy Characters, Guns and Weapons, Homes and Decorations, People, Etc. And in Extras you get a Rainbow, a Star Field, a Lightning Bolt, and a Space Fighter along with the Signs of the Zodiac.

All graphic images are stored in the IFF format and thus can be used in the DeluxePaint and DeluxeVideo programs from the same company.

As if that weren't enough, the month also brings POWER TOOLS in the form of an Art & Utility disk to be used as an adjunct to DeluxePaint from Electronic Arts.

First among the several power options offered is a print spooler called PrintUtility. Using it allows you to print a picture without tying up your Amiga.

Running concurrently with DeluxePaint, the spooler is controlled by its own small set of menus. As an added bonus, just before printing a requester window asks if you wish the background color of your picture to be transparent. Since the default background of DeluxePaint is black and since many of the stored images use this background, this is a feature to be treasured. In clicking on the YES button, you are making certain the background will not be printed.

And if you don't believe that's a plus feature, ask the guy who trashed a printer ribbon by printing the Tut picture in default mode, complete with black background.

Second of the power tools included here is a SlideShow Utility for creating sequential showings of pictures created with DeluxePaint.

For best effect, the SlideShow Utility program, the paintings you intend to use and the script you write should all be contained on the same disk. With this done, you have then created a runtime disk which can be used without the parent program.

Write the script on Notepad using commands such as LOAD: (drawer/file/picture); SHOW: (picture); WAIT (n seconds); SCROLLUP; SCROLLUP SPEED(n); FADE OUT; FADE OUT TIME(n); etc., where (n) is the number of seconds.

In addition to showing the paintings, SlideShow also supports the DeluxePaint color cycle command, which flips through a range of palette colors in a kind of simplified animation.

The third utility is based on Polyscope—remember the mind candy images on the Kaliedoscope disk that came with your Amiga? They're back, but in a form that now allows you to make use of them by calling up a Polyscope pattern (F1-F10); freezing and printing the pattern; freezing and saving the pattern in a .pic file.

Saved Polyscope images can also be used as DeluxePaint files so that they can be loaded and altered using the tools of the painting program.

Besides the utilities, there are included here more than 175 new "brushes" in seven categories for use in creating DeluxePaint pictures in minutes.

If you're not familiar with the concept of brushes, they are portions of a picture that have been saved as a brush. Though you could use them as brushes for lines and swirls, the best and most common use is as a rubber stamp.

Stamp a part of the castle wall here; stamp a turret here; stamp the dragon here; the dragon's fire here; the wizard here and so on.

New categories of brushes included on the Art & Utility disk are Maps, Graphs, Faces, Africa, Aliens, Dinosaurs and Birds. All can be used in a cut-and-paste manner; can be sized and rotated; and can be used multiple times in the same picture.

So if you've been trying to work out a storyboard for a new sci-fi movie script, you can grab the Statue of Liberty from the DeluxePrint Art Disk, grab a dinosaur and an alien from the DeluxePaint Art & Utility disk, use a frozen Polyscope image to represent your time travel portal, store it all on a runtime SlideShow disk and...Never mind. It's been done.

Art Disk 2 and Arts & Utilities disk are products of Electronic Arts at 1820 Gateway Drive, San Mateo, CA 94404. Prices are $29.95 ea.

It's been a busy month for Trip Hawkins and crew, for in addition to producing all that instant art, they have also produced INSTANT MUSIC and so can you.

Neither the name of the program or my flat statement is an exaggeration: boot the program and as soon as the titles are finished and the work-screen comes on, the INSTANT MUSIC theme starts playing. At the bottom of the screen you'll notice four instruments but if you listen carefully you'll find that only three of them are playing. That's because the fourth instrument is yours (it's the one highlighted with white lettering) and no matter what it is, all you need do to play it is click twice on the left mouse button and begin moving the pointer back and forth across the screen.

Try an up-and-down movement and you'll hear the notes changing. Drag it across the very bottom to hear a monotone bass. If you don't like that particular instrument, select one of the others by clicking on it or go to the pull-down menu and find the one with which you're most comfortable.

For a real treat, select a violin, drag your pointer across the very top of the screen and drive your dog crazy.

And if you're fortunate enough to have your Amiga

continued on page 144

COMPUTER COMPONENTS
FCC CLASS B APPROVED

IBM PC/XT-COMPATIBLE SYSTEM $597

includes:

640K Motherboard with 256K installed ($135)
One 360K Floppy Disk Drive ($90)
FD Controller Board ($34)
Monochrome Graphics/Printer Board ($80)
150-Watt Power Supply ($70)
XT-Type Case ($45)
12" TTL-Output Monochrome Monitor ($90)
5150-Type Keyboard ($53)

XT TURBO SYSTEM $629

includes:

4.7 & 8 MHz Motherboard with 256K Onboard ($167)
Same Additional Components as IBM PC/XT-Compatible System

IBM PC/AT-COMPATIBLE SYSTEM $1299

includes:

6 & 8 MHz Motherboard 1 MB Memory with 512K with Phoenix BIOS ($649)
1.2 MB Floppy Drive ($145)
WD FD/HD Controller ($225)
200-Watt Power Supply ($120)
AT-Type Case ($85)
5060 AT-Type Keyboard ($75)

XT ADD-ON COMPONENTS

Color Graphics Board $65
Enhanced Color Graphics Card $239
Multi-I/O Board $84
Multifunction Board $75
512K Expansion Board with OK $45
Parallel Printer Board $21

XT TURBO ADD-ON COMPONENTS

RGB Color Monitor $275
1200 Baud Modem (internal) $129
20-MGB Hard Disk System ST-225 Seagate with WD Controller $425

AT ADD-ON COMPONENTS

30-MB Seagate 4038 Hard Disk $659
Multifunction Card Serial, Parallel, 1.5 MB, OK $165
Serial/Parallel Card $69
1.2 MB FD Controller $105

ONTRACK SYSTEMS

P.O. Box 41276
San Jose, CA 95160

Telephone Orders

Outside CA: 1-800-331-2709
In CA and for more information: 408-224-8506 (M-F, 8am-6pm)

Payment

check, cashier's check, money order, C.O.D.

CA residents add 7% sales tax

WHY BUY GRAY MARKET... BUY DIRECT!

FREE SHIPPING ON PREPAID ORDERS BY UPS GROUND. *CA RESIDENTS 6.5% SALES TAX. FULLY INSURED IN CONTINENTAL U.S.A. UPS BLUE & RED AT EXTRA CHARGE.*

ALL ORDERS PLEASE ADD 5% HANDLING. *PERSONAL CHECKS TAKE 15 DAYS TO CLEAR. RETURNED ITEMS WILL REQUIRE A 15% RESTOCKING FEE.*

C.O.D. ORDERS: *VISA (NO 2% CHARGE); MASTERCARD; MONEY ORDER, OR CASHIERS CHECK.*

AT COMPATIBLE 6 & 8 MHZ AT®-1MB ENHANCED CONFIGURATION

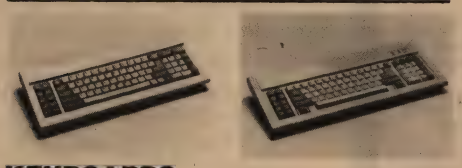
- 80286-8 CPU (80287-8 OPTIONAL)
- 6 AND 8 MHZ. SPEED SELECTABLE
- 640 K. ON BOARD RAM. UP-TO 16 MGB. IN SYSTEM
- 1.2 MGB. FLOPPY. TEAC
- 20 MGB. HDD W/WD CONTROLLER
- COLOR OR MONOCHROME GRAPHICS CARD
- AT STYLE KEYBOARD/PRINTER PORT
- 200 W. POWER SUPPLY/AT CASE
- THE BEST FOR XENIX, AUTOCAD, DB-3

FCC and UL

- **C.P.U. 80286 RUNS 8 MHZ HIGH SPEED CLOCK 70% FASTER THAN THE IBM PC/AT**

...$1,999.00

▶ FREE HI-RES MONITOR

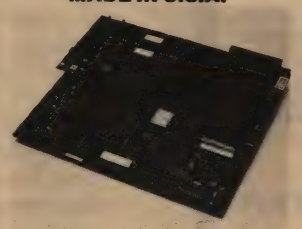


KEYBOARDS

C-126	KEYBOARD- 5152-XT/AT	$ 89.00
C-127	KEYBOARD- MODEL 5060 (AT STYLE)	$ 59.00
C-128	KEYBOARD- MODEL 5151	$ 79.00

MADE IN U.S.A.

PC/AT SYSTEM BOARDS CARDS



NEW!

FCC approved

C-120	PC/AT 1MGB. MOTHER BOARD OK W/BIOS	$ 599.00
C-121	PC/AT 1MGB. MOTHER BOARD 8MHZ. OK. W/BIOS	$ 799.00
C-122	PC/AT 1MGB. MOTHER BOARD 6 AND 8MHZ. (1 WAIT, NON-WAIT)	$ 899.00
C-123	AT- 3MGB. MULTI-FUNCTION OK	$ 239.00
C-124	AT- 2MGB. MEMORY EXPAND ADAPTER OK	$ 169.00
C-125	AT- I/O ADAPTER	$ 139.00

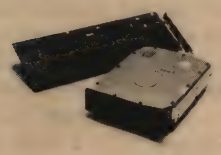
POWER SUPPLIES

FCC AND U.L. APPROVED

C-129	135W. POWER SUPPLY 110/220	$ 69.00
C-130	150W. POWER SUPPLY 110/220	$ 79.00
C-131	200W. POWER SUPPLY 110/220V	$ 99.00

FLOPPY DISK DRIVE

C-135	TEAC 55BV	$ 99.00
C-136	TEAC 55GF, 1.2MGB. FOR AT	$ 129.00
C-137	CHINON	$ 89.00
C-168	IBM QUME OR MAPLE DRIVE	$ 79.00
C-138	TOSHIBA OR FUJITSU DRIVE	$ 89.00



HARD DISKS

C-140	20MGB FOR AT	$ 349.00
C-141	30MGB. FOR AT	$ 499.00
C-142	40MGB. FOR AT	$ 599.00

TURBO AT®-2000

- C.P.U. 80286-8 RUNS BOTH AT 6 & 8 MHZ CLOCKS 250% TO 300% FASTER THAN IBM
- ZERO WAIT STATE AT 8 MHZ 1 WAIT STATE AT 6MHZ
- SUPPORTS SOFTWARE SWITCHING BETWEEN 6 MHZ AND 8MHZ **FCC approved**

STARTER KIT FROM

$1200.00

TURBO-XT ENHANCED PACKAGE

- DUAL SPEED CPU 8mxz.8088-2 OR Vs-20 (8087 MATH COPR. OPTIONAL).
- Up to 70% faster than IBM-XT. ▶ 640K. on board.
- 8 expansion slots. ▶ Two 360K. 1/2 height disk drives.
- FDD controller. ▶ Color graphics card.
- I/O card (2 serial; 1 parallel; game; real time clock/calendar; battery. ▶ AT style keyboard. **UL**
- 135W. switching power supply. ▶ Case **FCC**
- **Many options available.**

ONLY -$899.00

XT COMPATIBLE

▶ ONE YEAR LIMITED WARRANTY

PC-XT ENHANCED COMPATIBLE SYSTEM

- CPU 8088/4.77MHZ. (8087 MATH COPR. .. V-20 OPTIONAL)
- 640 K. MEMORY ON BOARD
- 8 I/O SLOTS
- FDD CONTROLLER
- TWO DS/DD DRIVES
- I/O-2 SERIAL; 1 PARALLEL; GAME; REAL TIME CLOCK/CALENDAR; BATTERY
- COLOR GRAPHICS CARD
- 135 W. SWITCHING POWER SUPPLY 110/220V.
- AT STYLE KEYBOARD/CASE

FCC UL

ONLY $799.00

- **Options:**

20 mb.1/2 height hard disk w/controller	add-$ CALL
30 mb.1/2 height hard disk w/controller	add-$499.00
12" Hi-Resolution Monitor (green or amber)	add-$119.00
14" RGB color monitor. Hi-Resolution 0.39 (dot)	add-$349.00

Also available: W/tape backups, modems, larger HDD, networking systems, AT-cases (large or mini).

▶ FREE WITH PURCHASE OF PC/XT or TURBO XT... LEGAL MS DOS VER.2.11 AND GW BASIC OR MONITOR.

NEW PRODUCT OF THE MONTH!!

■ ASSEMBLED AND TESTED IN THE U.S.A.

COMP

NEW FROM U.S.A.

THE MULTI-USER, MULTI-TASKING, AT-COMPATIBLE

FCC and UL approved

▶ Assembled and tested in U.S.A.

$2,499.00

▶ ONE YEAR LIMITED WARRANTY

- 80286-8 PROCESSOR (80287-8 OPTIONAL)
- 6 AND 8 MHZ. ONE-WAIT AND NON-WAIT SELECTABLE BY SOFTWARE OR KEYBOARD
- 1 MGB. ON BOARD 120 NS. DRAM'S UPGRADABLE TO 16 MGB.
- TWO TEAC 1.2 MGB. DRIVES, WD-CONTROL.-FDD/HDD
- I/O SERIAL, PARALLEL, GAME CARD
- 20 MGB. 39MS. HDD (OPTIONAL 30-40-80-100-160 MGB.)
- COLOR OR MONOCHROME GRAPHICS CARD
- 5152 AT KEYBOARD/AT CASE/200 W. POWER SUPPLY
- (1.2 MGB. TEAC WILL FORMAT READ/WRITE 320 K./360K./1.2 MGB.)
- THE BEST FOR XENIX, AUTOCAD, DB-3 ■ **MANY OPTIONS AVAILABLE**

▶ NEW ACCESS COMM.SOFTWARE

100% HAYES SMART-MODEM COMPATIBLE, AND MUCH MORE

1200 OR 300 BPS, FULL OR HALF DUPLEX

UPGRADEABLE TO 2400 BPS.

EXTREMELY FAST DIALING, TOUCHTONE OR ROTARY

SYSTEM CLOCK WITH BATTERY BACKUP ALLOWS DATE AND TIME STAMPING OF ALL YOUR FILES (OPTIONAL)

OPEN ARCHITECTURE EPROM ENABLES MODEM FIRMWARE (UPGRADE OR CUSTOMIZATION)

OPTIONAL SOLID STATE TOUCHTONE DETECTOR FOR ACCESS TO YOUR COMPUTER FROM TOUCHTONE PHONES

AUDIO INPUT FOR VOICE SYNTHESIZER OUTPUT OVER PHONE LINES

ADVANCED MICRO-PROCESSOR CONTROL FOR AUTOMATIC OPERATION, WITH BUILT-IN CALL PROGRESS TONE DETECTION AND "DEMON DIALING"

ZOOM MODEM 1200

OPTIONAL 8K BYTE RAM BUFFER

AUTO-DIAL/AUTO-REDIAL/AUTO-ANSWER

COMPLETE WITH PHONE CORD, BRACKET, AND CARD GUIDE

MADE IN USA. FCC APPROVED. TWO YEAR WARRANTY.

C-159	ZOOM MODEM 1200ST	$199.00
C-160	ZOOM MODEM 1200XL	$249.00

CASES

C-132	XT- FLIP TOP CASE	$ 49.00
C-133	XT- SLIDE CASE	$ 49.00
C-134	AT- SLIDE CASE	$ 84.00

MONITORS

C-143	MITSUBISHI COLOR HI-RESOLUTION	$ 299.00
C-144	EGA-MEGA GRAPH+	$ 295.00
C-145	TVM RGB 14" COLOR HI-RESOLUTION 0.39 DOT	$ 349.00
C-146	GOLDSTAR HI-RESOLUTION	$ 89.00
C-139	NEC 1401 Multi-Sync	$ 569.00

FCC approved

PC/XT SYSTEM BOARDS ADD-ON CARDS

C-100	XT-640K. MOTHER BOARD 4.77MHZ. OK. 8 I/O SLOTS W/BIOS	$ 120.00
C-101	TURBO-XT 640K. 4.77MHZ.-8MHZ.-8 I/O SLOTS W/BIOS	$ 139.00
C-102	8MHZ. 640K. TURBO-XT 8 I/O W/BIOS	$ 159.00
C-103	384K. MULTIFUNCTION CARD	$ 87.00
C-104	MONOCHROME GRAPHIC CARD W/PRINTER PORT	$ 79.00
C-105	MONOCHROME GRAPHIC CARD	$ 69.00
C-106	COLOR GRAPHIC CARD	$ 65.00
C-107	COLOR GRAPHIC PRINTER CARD	$ 85.00
C-108	MULTI-I/O CARD	$ 86.00
C-109	DISK I/O CARD (FDD/2+MULTI I/O)	$ 99.00
C-110	DISK DRIVER CARD W/CABLE (2 DRIVES)	$ 35.00
C-111	DISK DRIVER CARD (4 DRIVES) W/CABLE	$ 39.00
C-112	DUAL RS-232 2ND. OPTIONAL	$ 34.00
C-113	512K. RAM CARD OK. RAM	$ 49.00
C-114	PARALLEL PRINTER CARD	$ 29.00
C-115	W.D./XT HARD DISK CONTROLLER	$ 149.00
C-116	300/1200 BAUD INTERNAL MODEM W/SOFTWARE (HAYES COMP)	$ 179.00
C-117	NEW TYPE EPROM WRITER 4 TOOL	$ 149.00
C-118	NEW INFRA RED JOY-STICK	$ 49.00
C-119	NEW APPLE TO IBM TRANSFER CARD W/DISK	$ 129.00

PRINTERS

C-147	OKIDATA 182	$ 259.00
C-148	OKIDATA 192	$ 419.00
C-149	PANASONIC 1080A (100CPS. W/NLQ)	$ 249.00
C-150	CITIZEN MSP-20. (200 CPS)	$ 349.00

SERVICE, SUPPORT, LOWER PRICES. MAKE US NUMBER ONE.

COMP

COMPSTAR. INC.

1348 Elm Avenue, Glendale, CA 91201

© 1986 COMPSTAR, INC.

ORDERS ONLY: 818/842-4606

CUSTOMER SERVICE: 818/845-3385

TELEX: 797196

EASY LINK: 62905140

*COMPSTAR AT is a registered Trademark of Compstar, Inc.

® IBM is a registered Trademark of International Business Machines, Inc.

VISA

WE HONOR MasterCard

DEALERS & WHOLESALERS INQUIRIES INVITED. CALL FOR QUANTITY DISCOUNTS

Amiga Workbench continued from page 142

wired into a stereo amplifier, you'll notice the terrific sound separation.

This playalong feature, in which you become a member of a quartet, is called Mousejam. It works because a default setting called Score Rhythm keeps you in time with the other pieces, and because your range is kept within the proper octave, thus giving you the freedom to change notes without ruining everything else.

However, if you wish to change the time, go to the menu and select Keypad Rhythm, where you select the timing from the numeric keypad; or Free Rhythm, where your pace with the mouse determines the beat.

The workscreen of INSTANT MUSIC resembles a horizontal piano roll with the notes represented by the placement of punch-outs, but in this case the punch-outs are color-coded for the four instruments involved, allowing you—even if you don't read music—to get a feel for what the three other guys are doing and for what you should be doing.

In the boxes naming the instruments are click-on triangles for transposition as well as slider bars that control the volume of the individual instruments. At the top of the screen, a tempo bar allows adjustment of that feature; a zoom feature displays more or less of the measures in the piece to allow for finer editing; a chords icon helps you build one, two or three-note chords; and scroll arrows send the piano roll moving across the screen.

It would be wrong to leave you with the impression that this is a program for Mousejamming alone, however, for INSTANT MUSIC is also a serious program for the serious creation of music of up to 64 measures.

Besides an extensive library of canned music from which you can learn or with which you can play along, MUSIC allows the use of all the previously mentioned tools to create your own compositions, utilizing different groups of the dozen or so instruments included in the program. Notes can be placed single or, using the Quickdraw feature, in groups.

In the latter instance, composing is as simple as drawing a line on the screen, much in the same way you would do it with DeluxePaint or any other mouse-driven drawing program. Select the instrument for which you wish to compose, select Quickdraw and from a submenu select the drawing pattern, and begin drawing.

Whether you're working on something new or reworking something from the library, your notes appear on the workscreen in the color for the selected instrument and you're suddenly—instantly—a composer. At least until you play it back.

Should you not be content with seeing notes represented as punches on a piano roll, click on the Scale Ruler. Now, at the right side of the screen, a ruler appears and you'll see the marker lines change as various notes are played. At the same time, on the left side of the screen, a one-octave piano appears and shows the keyboard equivalent of the current note and a note indicator, complete with sharp and flat markings, indicates which note is being played.

A word processor alone will not allow you to write a best-seller and INSTANT MUSIC alone will not allow you to write the music for Whitney Houston's next gold record.

However, with Mousejam and with its discarding of the traditional Grand Staff in favor of what is probably a more instinctive representation of musical notes, INSTANT MUSIC can and does offer a more instant gratification for those who would like to noodle around—and a more lasting gratification for those who have the talent and who wish to express it in a way that is colorful and fun.

The music you create, or recreate by altering something from the library, can be saved to a data disk. Because the saving is done in the IFF format, you can use the files with certain other products—print the file as sheet music with Deluxe Musical Construction Set (coming soon to a software store in your neighborhood); or use the file as a soundtrack for sequences created with Deluxe Video (which also arrived, and

continued on page 146

ALL SALES ARE MADE SUBJECT TO THE TERMS OF OUR 90 DAY LIMITED WARRANTY. A COPY OF THIS WARRANTY IS AVAILABLE FREE, ON REQUEST.

DIGITAL RESEARCH COMPUTERS (214) 225-2309

CAF 8 MHZ AT COMPATIBLE - $1399

★ PRODUCED BY CAF: A $500 MILLION/YEAR TAIWANESE CONGLOMERATE.
★ BURNED IN FOR 48 HRS. ★ INCLUDES DOS 3.1 AND MANUALS.
★ 512K RAM, EXPANDABLE TO 1MEG ON M.B. ★ 1.2 MEG FLOPPY INCLUDED.
★ 80286 WITH OPTIONAL 80287 ★ ON BOARD REAL TIME CLOCK.
★ AT STYLE KEYBOARD WITH ENLARGED ENTER AND SHIFT.
★ 195W POWER SUPPLY ★ COMPLETE SERVICE MANUAL AVAILABLE: $40.
★ COMPLETE SYSTEM DOCUMENTATION INCLUDED, PLUS DOS MANUALS.
★ FLOPPY AND HARD DISK CONTROLLER CARD INCLUDED.
★ ERSO BIOS FOR MAXIMUM AT SOFTWARE COMPATIBILITY.
★ LIMITED 1-YEAR FACTORY WARRANTY. ★ FCC CERTIFIED!
★ 1.2 MEG FLOPPY CAN READ AND WRITE 360K DISKETTES. ADD $15 UPS.

STANFORD TURBO XT - $399

4.77 OR 8 MHZ ★ FCC CERTIFIED ★ 640K MOTHER BOARD (O K) ★ .135 WATT P.S. ★ XT-AT 5160 KEYBOARD ★ FLIP TOP CASE ★ 8 EXPANSION SLOTS ★ ASSEMBLED AND TESTED ★ WITH BIOS ★ FLOPPY CONTROLLER CARD & CABLES ★ WITH DOCUMENTATION. ADD $12 UPS.

A.R.C. XT TURBO - $529

4.77 OR 7.4 MHZ ★ 8 EXPANSION SLOTS ★ SLIDE OUT PC CASE ★ 5160 XT-AT KEYBOARD ★ MS DOS 3.1 + BASIC DISKETTE ★ 256K RAM, EXPANDABLE TO 640K ★ 4 LAYER JAPANESE MOTHER BOARD ★ FULLY TESTED AND BURNED IN. ★ SUPERIOR, CLEAN BIOS. ★ 135 WATT P.S. ★ SUPERB DOCUMENTATION ★ FCC CERTIFIED. ADD $15 UPS.

CMI 6640 33 MB. HARD DISK 39 MS - AT COMPATIBLE. VERY LIMITED STOCK — $325

XT OPTIONS:

★ V20.8 MHZ NEC PROCESSOR. REPLACES 8088. - $12.95
★ TWO 1/2 HT. D.S. DD. FLOPPIES INSTALLED: $175/Pair
★ 256K DRAM. 150 NS. INSTALLED AND TESTED: $28/9
★ 64K DRAM. 150 NS. INSTALLED AND TESTED: $10/9
★ HARD DISK: ST225 WITH CONTROLLER CABLES & FORMATTED: $425
★ ZUCKER COLOR CARD WITH PARALLEL PRINTER PORT: $86
★ MONOCHROME/GRAPHICS VIDEO CARD WITH PRINTER PORT: $89
★ PLEASE CALL FOR MONITOR PRICING

S100 BUSS LIVES! WE STILL SELL S100 PRODUCTS AND CP/M SINGLE BOARDS. FREE CATALOG.

MEX-PC MODEM SOFTWARE PACKAGE $69.95

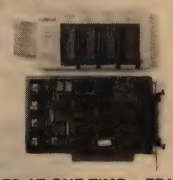
A FANTASTIC COMMUNICATIONS PACKAGE WITH FEATURES TOO NUMEROUS TO LIST. SEE MAY/JUNE '86 MICRO SYSTEMS JOURNAL FOR FULL REVIEW OR CALL FOR BROCHURE. SUPPORTS COLOR, KERMIT PROTOCOL, Y MODEM BATCH, VT100 EMULATION, REMOTE OPERATION, ON LINE HELP, ETC. RUNS UNDER PC/MS DOS. 180 PAGE MANUAL & BINDER.

MEX-PACK LIST IS $99.95 — **SPECIAL $69.95**

SCHEMA: Schematic Capture and Drawing Package

WORKS WITH PC'S AND COMPATIBLES. EASY TO USE WITH OFF THE SHELF PRINTERS, MOUSES, VIDEO CARDS, ETC. COMES COMPLETE WITH A HUGE COMPONENT DATABASE. SUPPORTS MONOCHROME, COLOR, OR EVEN EGA. FREE BROCHURE AND DEMO DISKETTE ON REQUEST. LIST $500 — **SPECIAL $396.15**

NEW! PC/XT EPROM PROGRAMMER $199



★ LATEST DESIGN ★ PROGRAMS UP TO 4 DEVICES AT ONE TIME ★ FEATURES EASY TO USE MENU DRIVEN SOFTWARE THAT RUNS UNDER PC OR MS-DOS. ★ USES AN INTELLIGENT PROGRAMMING ALGORITHM FOR SUPER FAST (8X) EPROM BURNING. ★ THIS PLUG-IN BOARD ATTACHES TO AN EXTERNAL MINI CHASSIS CONTAINING 4 TEXTOOL Z.I.F. SOCKETS. ★ NO PERSONALITY MODULES REQUIRED ★ AUTOMATIC VPP SELECTION: 12.5V, 21V, OR 25V. ★ EPROM DATA CAN ALSO BE LOADED FROM OR SAVED TO A DISKETTE. ★ PROGRAMMING SOFTWARE SUPPORTS: 2716, 2732, 2732A, 2764, 2764A, 27128, 27128A, 27256, 27256A, 27512, AND 27512A. ★ ASSEMBLED AND TESTED, BURNED. IN WITH MANUAL. $199 WITH SOFTWARE.

PC/XT AT ENHANCED GRAPHICS ADAPTER $279

★ 3 CARDS IN ONE!
★ 100% IBM COMPATIBLE.
★ COMPATIBLE WITH IBM EGA, COLOR GRAPHICS ADAPTER, OR MONOCHROME ADAPTER.
★ 256K VIDEO RAM! (4 TIMES MORE THAN IBM!)
★ DUAL FREQUENCY OUTPUT FOR EITHER EGA OR STANDARD RGB COLOR MONITORS.
★ PERFECT MATE FOR NEC MULTISYNC COLOR MONITOR!
★ LIGHT PEN INPUT.
★ FULL 16 COLORS.
★ MFG. BY D.F.I., THE PREMIER FAR-EAST ADD-ON BOARD MAKER.
★ A SUPERIOR BOARD AT ABOUT 1/3 THE COST OF IBM EGA!
★ ASSEMBLED, TESTED, AND BURNED IN. WITH MANUAL.
★ USES CHIPS & TECH. VLSI 4 CHIP SET.
★ FIELD PROVEN BIOS.

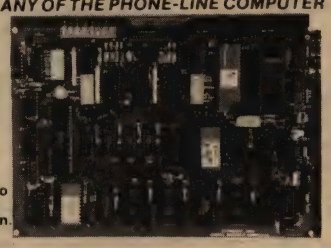
MICROTEK 2 M.B. EXPANDED MEMORY BOARD $195 (O. K)

MEETS LOTUS/INTEL/MICROSOFT SPEC. FOR EXPANDED MEMORY. FOR USE AS EXPANDED MEMORY (EMS), ELECTRONIC DISK, OR PRINT SPOOLER. WITH A SUPERB MANUAL AND INSTALLATION SOFTWARE. FOR PC/XT OR MOST COMPATIBLES. FOR 2 MEGABYTES OF 150 NS RAM (72 DEVICES) INSTALLED AND BURNED IN ADD $225.

ZRT-80 CRT TERMINAL BOARD!

A LOW COST Z-80 BASED SINGLE BOARD THAT ONLY NEEDS AN ASCII KEYBOARD, POWER SUPPLY, AND VIDEO MONITOR TO MAKE A COMPLETE CRT TERMINAL. USE AS A COMPUTER CONSOLE, OR WITH A MODEM FOR USE WITH ANY OF THE PHONE-LINE COMPUTER SERVICES.

FEATURES:
★ Uses a Z80A and 6845 CRT Controller for powerful video capabilities.
★ RS232 at 16 BAUD Rates from 75 to 19,200.
★ 24 x 80 standard format (60 Hz).
★ Optional formats from 24 x 80 (50 Hz) to 64 lines x 96 characters (60 Hz).
★ Higher density formats require up to 3 additional 2K x 8 6116 RAMS.
★ Uses N.S. INS 8250 BAUD Rate Gen. and USART combo IC.
★ 3 Terminal Emulation Modes which are Dip Switch selectable. These include the LSI-ADM3A, the Heath H-19, and the Beehive.
★ Composite or Split Video.
★ Any polarity of video or sync.
★ Inverse Video Capability.
★ Small Size: 6.5 x 9 inches.
★ Upper & lower case with descenders.
★ 7 x 9 Character Matrix.
★ Requires Par. ASCII keyboard.



$89.95 #ZRT-80 A&T ADD $50
(COMPLETE KIT, 2K VIDEO RAM)

FOR 8 IN. SOURCE DISK (CP/M COMPATIBLE) ADD $10

BLANK PCB WITH 2716 CHAR. ROM. 2732 MON. ROM $49.95
SOURCE DISKETTE - ADD $10
SET OF 2 CRYSTALS - ADD $7.50

THE NEW 65/9028 VT ANSI VIDEO TERMINAL BOARD!

★ FROM LINGER ENTERPRISES ★

A second generation, low cost, high performance, mini sized, single board for making your own RS232 Video Terminal. Use as a computer console or with a MODEM for hook up to any of the telephone-line computer services.

FEATURES:
★ Uses the new SMC 9028 Video Controller Chip coupled with a 6502A CPU.
★ RS-232 at 16 Baud Rates from 50 to 19,200
★ On board printer port!
★ 24 X 80 format (50/60 Hz).
★ For 15,750 Hz (Horiz.) monitors.
★ 3 Terminal Modes: H-19, ADM3A, and ANSI X 3.64-1979
★ Wide and thin-line graphics.
★ White characters on black background or reversed.
★ Character Attributes: De-Inten, Inverse, Underline and Blank.
★ Low Power: 5VDC @ .7A, ± 12VDC @ 20MA.
★ Mini size: 6.5 X 5 inches.
★ Composite or split video.
★ 5 X 8 Dot Matrix characters (U/L case) with descenders.
★ Answer back capability.
★ Battery backed up status memory.
★ For ASCII parallel keyboard.

MICRO SIZE!

$99.95 (Full Kit)
ADD $40 FOR A&T

SOURCE DISKETTE: PC/XT FORMAT 5¼ IN. $15

NEW OPTION
PC/XT keyboard ROM. Allows use of IBM style keyboard. $15

Digital Research Computers

P.O. BOX 381450 • DUNCANVILLE, TX 75138 • (214) 225-2309

TERMS: Add $3.00 postage. Orders under $15 add 75¢ handling. No C.O.D. We accept Visa and MasterCharge. Tex. Res. add 5-1/8% Tax. Foreign orders (except Canada) add 20% P & H. Orders over $50 add 85¢ for insurance. Prices subject to change without notice.

*TM OF DIGITAL RESEARCH INC. (CALIF.) *IBM TM OF INT. BUS. MACHINES. WE ARE NOT ASSOCIATED WITH DIGITAL RESEARCH INC. (CALIF.) THE SUPPLIERS OF CPM SOFTWARE

Deluxe Video continued from page 76

up pictures which are capable of being moved; Text, which provides for the creation of normal or "polygon" titles; and Control which gives you the means of chaining short videos into one long video.

Without chaining, you create what you are, in effect, "one-liners": The script seen partially in Figure 4 fades in on a background of Earth as seen from space (a picture). The words "Mission To Jupiter" (polygon text) appear and disappear one at a time. After a brief pause, a paper airplane (an object) sails from the lower left corner to upper right corner and vanishes from the screen.

That's it. That's how much you get with 512K.

But with the chaining feature, another scene could be built—perhaps showing the airplane zipping past Mars—and with a Fade or a Cut between the two they would play as one long sequence. In this manner, the length of the videos you create are limited only by the capacity of the runtime disk on which you store them.

For titling, two types of text are available, differing in the effects that can be used with them: Text Line can appear, disappear, be moved or used as a stamp pad; Polygon Text can do all these and can also be sized, shrinking or expanding on screen, and it can be rotated around the X, Y or Z axis—or around all three.

For a mental picture of this, imagine a black screen. Suddenly a yellow dot appears and seems to grow until it is seen as an object tumbling toward the viewer; as it comes closer, still growing, letters become apparent and as it fills the screen it locks in position, right side up and readable "(your name) PRESENTS"...

The possibilities for titling alone seem almost endless and the requester window for both types of text allow for changes in both color and "texture"—the latter by using fill patterns. A word of caution: Polygon Text requires more memory than a text line, so it is a good idea to "disappear" it when its usefulness has ended.

In using any of the features and effects described so far, you are not locked in to your first choice. Effect requests, as an example, can be resized along the Time Bar at any time, in order for you to fine-tune the flow of events in your script. In addition to this, a pull-down edit menu allows for Cutting, Copying, Pasting and Changing the parts of your script—the same kind of controls you'd expect to find in a word processor. Also available here is an option for Show which can be invoked at any time—after each effect if you wish—to let you see exactly how everything looks so far by showing you your video screen up to the time of the last effect you requested.

There is no better introduction to the possibilities of Deluxe Video than the Player Disk—this is the one your dealer will be whipping out to demo the program for you. Within the several videos contained on the disk, virtually every trick of the program is demonstrated and the nicest thing about it is knowing you can create one exactly like it.

By copying the Player disk and emptying the drawers, you'll create a "runtime" disk on which to store your own videos. If you're not familiar with that term, it simply means that the disk contains everything needed to display videos but does not contain the means to create them. Nor does the main program have to be installed in order to run this disk.

You can make up a Player disk and (legally) provide copies of your work to anyone who has an Amiga, whether or not they also have Deluxe Video, and they can run it as often as they like for their own edification or enlightenment.

Or, if you've made a video that demonstrates a product or a service of your business, take the disk and your Amiga to the next trade show (or set it up in your showroom) and, by selecting the Loop option, let it run continously. If you've put in the effort, it will not fail to dazzle those who see it.

The Parts disk is another one that you'll wish to copy, probably more than once, for the drawers, once emptied, can be the repository of Pictures and Objects that you create with Deluxe Paint; of music created with Instant Music; of sound effects created with whatever means you have at hand. Because you'll store all these things in the IFF format, they can be shared by Deluxe Video.

Besides parts, this disk also provides some utility functions. A device called Framer makes it possible for you to create a sequence of still pictures and be able to play them back as an animated sequence—much in the way Hollywood animation used to be accomplished by drawing a sequence of pictures and photographing them one at a time with a single-frame technique.

The Unpack utility allows you to break a video down into its component parts (objects, pictures, sound, control) for use in other videos. With it, as an example, you could disassemble any of the demonstration videos included on the Player disk and use the parts and pieces to create an entirely new video that is all your own.

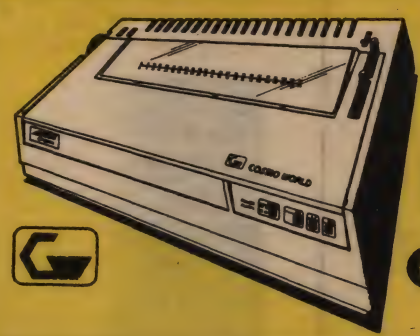
Videcheck contains routines for compressing videos so that they take up less space on the disk and also makes it possible for you to print out your script.

In playing back a video, there is no need to open the Scene window. Load it in—and here we're talking about using the Maker disk, not the Player Disk—using the pop-up requester window to select the one you wish. Then, from the pull-down Project window, select Play Video.

As it plays, you'll notice at the lower right of the screen something that looks like the remote control for a VCR. That's exactly what it is and you'll use it in the same way, using the mouse and pointer to click on the buttons.

With this, you can Play nor-

continued on page 160



DAISY WHEEL PRINTER $295

COSMO WORLD ADEUS CP2000

- IBM PC Compatible
- Compatible With The Diablo 630 WP Sequence
- Fast & Quiet (22 cps at 58 dB noise level)

Uses Diablo printwheels & ribbons!

1 year warranty

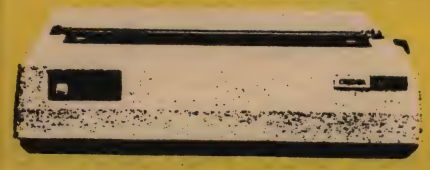
WE SELL LEADING EDGE MODELS D,M&MH

20MEG HARD CARD $569

13 month warranty

* For all IBM compatibles.
* Shock mounted for Compaq and other portables!
* Low power.
* Occupies 1 1/2 slots.

Okidata ML 93



Includes tractor feed 15" carriage

LIQUIDATION! $369 (LIST $799)

The ML 93 prints data bidirectionally at 160 cps, boldface at 80 cps, and correspondence quality letters at 40 cps. All, in up to 136 columns of standard characters, and up to 233, condensed. It features Okidata's long-life print head, the ASCII 96-character set, plus an alternate downline loadable 96-character set and all points addressable dot graphics. It all adds up to a remarkable value for growing businesses with wide column needs.

FOR USE WITH IBM-PC LEADING EDGE COMPATIBLE

This is the same monitor as is sold with the Leading Edge Model M & Sperry PC/HT

Manfactred by MITSUBISHI

Vivid, Clean Color Graphics are enhanced by a black mask contrast feature.
Up To 16 Colors For Text
Up To 8 Colors For Graphics

MODEL AT-1332A.

Resolution 640 Dots x 200 Lines

DB-9 Pin, Interface Cable Included

Character Display 2000 Characters (80 Columns x 25 Lines)

NO EXTRA CHARGE ON CREDIT CARD ORDERS • ALL ORDERS SHIPPED UPS GROUND UNLESS OTHERWISE REQUESTED • BUYER PAYS FREIGHT & INSURANCE • COD $1.90

THRIFTY BITS
606 WEST STREET ROAD, FEASTERVILLE PA 19047
(215) 355-3188

master charge VISA

32 Bit Turbo-Amiga Workstation Beats VAX 11/780

Adding Motorola's 32 bit, 68020 microprocessor and 68881 floating point coprocessor pair to the Commodore Amiga personal computer yields a very powerful, low-cost, color graphics workstation which outperforms the VAX 11/780 in some tests. Running the Dhrystone benchmark program on the Turbo-Amiga gives an amazing performance figure of 2250, 50% faster than the 1500 Dhrystone figure for the VAX 11/780. Another benchmark shows the Turbo-Amiga to be 40 times faster than the IBM AT computer with its coprocessor.

The 68020/68881 processor/math coprocessor board along with a 512K byte, 32-bit static RAM memory board and a SCSI Winchester controller board are mounted in a sidecar, 100 pin Amiga bus expansion box which also houses the power supply and an optional 40 MB Winchester hard disk drive. The 100 pin, full protocol Ranger bus has been specified by Commodore as the expansion standard for all future Amiga add-on products.

By exploiting the design features of the 68020 microprocessor, several innovative features have been incorporated into the Turbo-Amiga system. Since the 68020 bus is separate from the Amiga bus, it is run at 14.28 mhz, twice the frequency of the color-burst synchronized 7.14 mhz Amiga. This doubling of processor clock frequency results in a 100% performance increase over the basic Amiga. Utilizing the dynamic bus sizing capability of the 68020, 32 bit data and address buses are developed, resulting in another 100% performance increase over the 16-bit Amiga. Since the 68020's 32 bit buses are physically separated from the Amiga's Ranger bus, 32 bit DMA operation can take place at 14 mhz while the Amiga runs its 16 bit bus at 7 mhz. Amigados, Commodore's multitasking operating system for the Amiga, is available with sufficient documentation to allow developers to hook into the software and fully supports both the 68020 and 68881. Several software developers have compilers and assemblers for the Amiga which recognize 68020 and 68881 instructions.

The Turbo-Amiga appears to be capable of meeting Carnegie-Mellon's MMM specification for color graphics workstations of one million instructions per second processing power, one megabyte of memory and one million pixels of color graphics display.

Complete systems start at $5765 including color monitor, and are available from stock. For more information contact Computer System Associates, 7564 Trade Street, San Diego, CA 92121, telex 333693.

Mention that you read about in *Computer Shopper*. ●

Turbo-Amiga Expansion Unit

AT&T
THE RIGHT CHOICE

SYSTEMS TAILORED FOR YOUR BUSINESS

AT&T 6300 PERSONAL COMPUTER

- Benchmarked 2-3 times faster than IBM
- Monochrome/color monitor
- 20 or 30MB HD
- 10MB internal tape backup
- Choice of keyboards (standard or PC/AT layout)
- Up to 2 MEGS RAM
- Software: A/R, A/P, G/L, Job Cost, MRP Bill of materials

AT&T 6300+ WITH SIMUL-TASK

- UNIX/MS-DOS
- 512KB - 1MB
- 360KB, 1.2MB floppies
- 20, 30MB HD
- Up to 8 users

AT&T 6300 w/640K, DOS, AT&T MONITOR

6300-640K, 2 drv	~~$1775.~~ $1695.
6300-640K, 20MB HD	~~$2295.~~ $2195.
6300-640K, 30MB HD	$2395.
6300-640K, 20MB HD w/tape back up	CALL
Color monitor 640x400 resolution	$ 475.
6300+ w/SIMUL-TASK	CALL

SPECIALS

Toshiba P351	$1125.
Optical disk, 400MB XT/AT Compatible	CALL

DSI
DIGITAL SOURCE INC.
4805 Mercury Street
San Diego, CA 92111
AUTHORIZED VAR

800-621-0852 XT. 433 619-569-9333
Ask for Bob Long...PC Specialist

Amiga Workbench continued from page 144

which is so complex we thought it deserved an article of it's own.)

An additional note: Not long ago, there was a groundswell of resentment being expressed in User's Groups and on bulletin boards regarding the copy protection on Electronic Arts products for the Amiga. EA responded in what we feel is a positive manner: for productivity disks, send in your registration card and twenty dollars and they will send you a copyable disk. (As I understand it, your name is encoded on the disk in an effort to discourage you from freely distributing copies to all and sundry.)

I consider this a fair practice and it is not without precedent: remember that Sidekick for MS-DOS machines is available in protected and unprotected versions, with the unprotected version at a slightly higher price.

For INSTANT MUSIC, however, you are instructed on how to make a working copy of the disk. When booted, this copy will display a requester window asking you to insert the key disk (the master) from which it reads an ID number, verifying you as a genuine owner, and then allows you to use the working copy for everything else. In this method you have, at no extra cost, the ability to make an unlimited number of working copies but not the ability to distribute the program.

INSTANT MUSIC is available from Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404 at a suggested list price of $39.95. ●

Cadpak 64
continued from page 76

Another convenience feature is the "measure" command. This will tell you exactly how long or big one of your figures is. You can use co-ordinate cursor positioning to be exact in your placement of objects. The positioning can be relative or absolute.

A ZOOM command lets you modify the picture one pixel at a time.

The COPY command uses a "Cut and paste" style method. First the section to be copied is extracted to another area, then the new location is defined and the copy-in command pastes a copy on the screen. There are a variety of options to this command that give the operator more control over the process. REPLACE command erases whatever was beneath the copy. COMBINE adds the copy over the former information. MATCH adds only the points common to the copy information and what exists. With the other options provided, this is a very useful feature.

The documentation is adequate, though bulky. It contains both command summary and tutorial material. There are three tutorial sections, one for light pen users, one for keyboard command users and one that combines both. A space shuttle drawing is included for one of the samples. There is no index!

One of the most important sections and one which is frequently omitted from graphics manuals, is a table that lists the proper printer choices and switch settings for different printers and interfaces. It can even address a parallel printer that is attached to the user port and includes the pin connections for the cable.

Because the program uses high-resolution mode, you are basically limited to two colors. With some manipulation, you can have more colors on the screen but only in limited areas.

One interesting suggestion for using the program was to design T-shirt graphics. Once the design is complete, using the mirror copy command would put it in proper format for an iron-on.

128 Improvements

Besides increasing the screen resolution, Cadpak includes other improvements. It is self-booting, making it easier to use. With it, you can create and use templates and design your own custom fonts. When using measurements, you can add or subtract values.

In the regular mode, you are confined to working with what appears on the immediate screen. An extended drawing mode allows you to go outside the boundaries of the screen. When the cursor moves past the edge, the screen scrolls to follow you. In this mode, the "try again" function becomes limited to an "erase" which will remove the last edit made, but which will not replace any lines that may have been overdrawn.

The two packages contain features that make them especially attractive to a mechanical or other highly exacting artist. For these users, I would definitely recommend this product. If you are primarily interested in drawing pretty, colorful pictures of sunsets, landscapes, still-lifes or animals, you might be happier with another package.

Cadpak 64—$39.95
Cadpak 128—$59.95
Abacus Software, P.O. Box 7219, Grand Rapids MI 49510, 616-241-5510. ●

COMPUTER SHOPPER

DISPLAY ADVERTISING & CLASSIFIED ADVERTISING DEADLINE IS THE 2ND MONDAY OF EACH MONTH

ALL IN ONE!

PC-DESK.

ONE SOFTWARE PACKAGE FOR ALL USES

Now, finally at your command. A completely integrated word processor, calendar/reminder, name/address/phone database and directory. Letter/label/report printer, mailmerge, invoice system and printing calculator.

PC-Desk does just about everything you need. It's a powerful and easy-to-use tool that reduces your work and makes your business life easier. And, it does more than hundreds of higher-priced programs.

The Most Powerful Feature

PC-Desk automatically prepares your letters, invoices and memos.

It's fast and easy to send individually typed, personalized letters, either singly or by the hundreds. Just select the names you want. Tell PC-Desk which letter to send, and it does the rest.

It puts in the special greeting you use for each person. It adds the variable information you want. . .the shipment date, company or product name, or whatever you choose. All at the touch of a button.

PC-Desk is simply spectacular. Users say, "This is the way software ought to be!" Try it for 60 days. If you're not completely satisfied, return it for a full refund.

Free Updates, Free Support.

That's right. Free updates. (Remember, if you already own PC-Desk, send for your free update to version 6.5.)

And, if you ever need help, just call us. We'll talk you through it.

Look At Everything You Get!

Easy Instructions
Step by step directions on the screen. You'll always know what codes to use. Even if you're new to computers, you'll be efficient right away.

Calendar/Reminder
24 reminders per day. Reminder days are highlighted. Put the cursor on any day. . . all your reminders pop up. See a full month at a time. Flick back and forth between months. Print reminders with a single keystroke. You're organized and you'll stay organized.

To Do List
Tracks up to 20 projects. You'll never forget what you need to do.

Word Processor
Full-featured. . .why use any other word processor? PC-Desk gives you professional-looking documents. . .with bold, underlining, centering, and justification. Word wrap, block move, search, margin settings. And no waiting for screens to come up with Turboscreen.

Personal Address Book
Automatically printed in a pocket-sized format. Cross-indexed by company name. Breast-pocket holder free when you order PC-Desk.

Database
Outstanding organization and flexibility. Easy to access and maintain. Name, address, phone number (work and home), salutation, title, date, variables for automatic printing, comments, and more. Sort on zip, or alphabetically by name or company. Search, scroll through, change or delete. Select names for group mailings. Make notes on client contact. Print your rolodex, envelopes, (with return address too), letterheads, invoices, labels, entire name and address file.

Mail Merge
Fully integrated with database. Letters with up to four variables.

Calculator
Print your calculations. Pops up into word processor. Hex, binary, and octal for programmers.

Memory Partitioning
Lets you flip back and forth between PC-Desk and other programs. Cut and paste.

Logs
Client billing, computer use, telephone, and expense logs. Great for tax records! Print monthly statements with total time and expenses. Edit your logs. With auto-dialer calls are logged automatically.

Auto-Dial
Save time. Auto-dial any phone number in your database. Choose work or home number.

Encrypt
Protect your files from prying eyes.

DOS Functions
Copy, delete, print, view, renamefiles easily.

On-Screen Clock

Manual
Full instructions.

Not Copy Protected

SideKick is a registered trademark of Borland International, Inc. IBM is a registered trademark of International Business Machines Corp.

Software STUDIOS
8516 Sugarbush, Suite 104
Annandale, VA 22003
703 978-2339

PC-DESK SIMPLY THE BEST.

To order, or for more information:
Call Toll Free 1-800-A-PC-DESK

YES! Rush me the best—PC-Desk.
60-Day Money-Back Guarantee.

★ SPECIAL OFFER ★
Only **$79**
(plus $5.00 Shipping & Handling).
You save **$46** on the regular $125 price.
Offer Expires in 30 Days

☐ Check ☐ Money order
☐ MasterCard ☐ Visa

Card # _____
Expiration date _____/ _____
Name _____
Firm _____
Address _____
City _____
State/Zip _____

Requirements: IBM-PC, AT, XT, or compatible. 128K for program, 272K for memory partitioning, MS-DOS 2.0. Modem required for Auto-Dial only.

WE DON'T ASK YOU—
WE DARE YOU TO COMPARE!

Buy from us or else you will probably pay too much!

Now compare! The HSN PC/XT Turbo includes...a 4.77 MHz/8MHz, 640K mother board, a 135W power supply, a multi Input/Output card with one parallel port, one serial port, one game adapter port, battery backed clock calandar, floppy disk controller, two advanced ½ height 360K drives, a color composite graphics adapter card, an amber composite monitor, a XT 5150 keyboard, a TWO YEAR warranty, and AG outlet power surge protector.

FREE public domain software and operating system included!

A free daily software help line.

All This For Only **$779**

For all your computer needs call or write for a free catalog.
N.Y.S. Residents add 7% for sales tax.
Add $28.00 for shipping of computer.

HSN Computers
The Complete Computer Outfitters
P.O. Box 17514
Rochester, New York 14517
CAll 9:00 AM to 5:00 PM EST
(716) 266-9108

Hacking The ST
continued from page 77

(Modula-2 is just now starting to see a reasonable amount of use, C has been growing like gang-busters for the last several years.) Modula-2 is the language of choice right now for really large programs, and a knowledge of Modula-2 can help you pick up Ada, the monster language created by the DOD for military programming in the 21st century.

(Personally, I tend to stay away from languages designed by committees. Languages such as COBOL and Ada tend to be large, cumbersome, verbose and terribly difficult to pick up. You know the old joke that goes, "an elephant is just a mouse built to government specs." I think it was inspired by COBOL, DOD's answers to FORTRAN and ALGOL.)

Nothing will replace assembly language for squeezing the last ounce of performance out of a computer, but with today's increasingly fast equipment, more and more code is being written in C and less and less in assembly.

Many of the old programs (old, ha! many were written in 1980) I use on my CP/M systems were written entirely in assembly language. The ST versions of these programs are written entirely in C.

Because there are so many people wanting to use BASIC on the ST, we will try to provide some articles devoted specifically to BASIC on the ST. I will also try to introduce you to Modula-2 or at least let you look at some code so you can get a feel for the language.

I often have trouble writing these columns because there is so much more to computers than just knowing a language or two. Wherever possible, I try to introduce important topics from Computer Science and tie them to an ST topic.

A problem arises because something that strikes me as very powerful and important may be dull and dry to the average user. Taylor series expansion is the backbone of number-crunching on digital computers, but besides mathematicians and computer scientists, very few people give two hoots about the beauty of Taylor series expansion. This means that I have to bite my tongue and skip this topic. I guess you have to take the good with the bad.

On the plus side, there are many topics that tie in very well with the ST and provide the user with some really useful information about the ST and computers in general.

The color palette used to generate the display on the ST is typical of almost every color raster display in use today. The number of bits used to generate the red, green and blue signals vary but the technique remains the same. (See the July '86 Hacking The ST column.) If you understand how the ST selects colors, you know how they all do it.

Expensive ($5,000 to $10,000) color raster displays use 8 bits for color selection instead of 3 like the ST, but the rest of the system remains the same.

One of the reasons that it is important to learn general concepts is that you will more than likely continue to use computers and the general concepts you pick up now go a long way towards making you a computer expert in future years.

If you had learned BASIC inside and out, you had to start all over again when the hottest thing on the block became FORTH. After FORTH, Pascal was the "in" language. Now "just about everyone" is using C. Keeping up is a never-ending process, but it becomes much easier when you learn the underlying concepts, that way you see these languages as variations on machine translation, instead of looking at each one as a completely separate item.

I once had a class where we studied 8 different programming languages in 16 weeks while also writing a term paper and studying computer grammers. This sounds like a really difficult undertaking, but it was much easier than you might think.

The bottom line is a loop is a loop is a loop. In some loops you test for exit at the top of the loop, other loops test at the bottom. Some languages let you test at the top, bottom and in the middle all in the same loop, but once you understand the concept of the loop, the main question you have to ask

continued on page 149

FOR YOUR APPLE IBM, COMMODORE 64 OR CP/M COMPUTER

CONVERSE WITH YOUR COMPUTER!

AT LAST! A FULL IMPLEMENTATION of the original ELIZA program is now available to run on your microcomputer!

Created at MIT in 1966, ELIZA has become the world's most celebrated artificial intelligence demonstration program. ELIZA is a non-directive psychotherapist who analyzes each statement as you type it in and then responds with her own comment or question—and her remarks are often amazingly appropriate!

Designed to run on a large mainframe, ELIZA has never before been available to personal computer users except in greatly stripped down versions lacking the sophistication which made the original program so fascinating.

Now, our new microcomputer version possessing the **FULL** power and range of expression of the original is available for only $45. And to let you find out how she does it (or teach her to do more), we have included the complete **SOURCE PROGRAM** (written in BASIC) at no extra charge. By making simple modifications to the Source, even a beginner can easily customize ELIZA's responses. You can even make a simple change that will enable ELIZA to converse with you through a speech synthesizer!

Order your copy of ELIZA today and you'll never again wonder how to respond when you hear someone say, "Okay, let's see what this computer of yours can actually do!"

READ WHAT THE EXPERTS SAY ABOUT OUR VERSION OF ELIZA:

"Much more than a mere game...You'll be impressed with ELIZA...A convincing demonstration of Artificial Intelligence." —PC MAGAZINE

"Delightful entertainment...An ideal medium for showing off your system." —MICROCOMPUTING MAGAZINE

"ELIZA is an astounding piece of software...A fascinating program to use and study." —BARON'S MICROCOMPUTER REPORTS

"ELIZA is a great way to introduce your friends to computers...A very funny party game." —PETER A. McWILLIAMS

"ELIZA is an exceptional program, one that's fun to use, shows off your machine, and has great historical interest." —POPULAR COMPUTING MAGAZINE

"This version of ELIZA is the best we have seen. As a party game, it is unmatched." —HOME APPLICATIONS FOR THE C-64

ELIZA IS AVAILABLE IN THE FOLLOWING FORMATS:

- All Apple II computers (II, II Plus, IIe, IIc)
- Apple Macintosh (Microsoft BASIC required)
- IBM PC, PCjr, PC-XT and all other computers using PC-DOS or MS-DOS
- Commodore 64 (specify disk or cassette)
- 8 inch disk for all CP/M systems
- 5¼ inch disk for all CP/M systems (specify computer)

All versions are $45 and include a six page users manual

Please add $2.00 shipping and handling to all orders (California residents please add 6½% sales tax)

MC, VISA and checks accepted

Artificial Intelligence RESEARCH GROUP
921 North La Jolla Avenue, Dept. C
Los Angeles, CA 90046
(213) 656-7368 • (213) 654-2214

JVC 5¼" Diskettes
DS/DD w/sleeves & labels ... .45 ea.
100% Certified, Lifetime Warranty
NO MINIMUM

3½" SS/DD $1.25
3½" DS/DD $1.75

100% Teakwood Roll Top Case
Holds 70 - 5¼" $16.00
Holds 30 - 3½" $13.00

Joystick for Apple/IBM
2-Fire Buttons $17.00
3-Fire Buttons, 1 on handle ... $20.00

CALL FOR RIBBON PRICES!!

(800) 225-8735 — Outside Az.
(602) 439-3508 — Call Collect!!

M & M COMPUTER SUPPLIES
12234 N. 51st Avenue, Glendale, AZ 85304

Shipping 5% of order (min. of $2.50) plus $1.90 C.O.D.

Hacking The ST continued from page 148

about the loop in the XYZ language is "is it bottom or top tested?"

The same is true for most features of programming languages, there are only one or two main variations and a particular language usually uses only one of the variations.

A lot of people seem to think that they can learn everything there is to know about computers in a year. Computers are very complex and there is a hardware side and a software side to computers. Very few people can learn enough in 4 years of college to be called computer experts, so don't be discouraged if it takes you some time to come up to speed. Remember, computer experts are made, not born!!

Sometimes you may wonder why I spend so much time explaining a certain topic. What I'm trying to do is give you the background on why things are done that way so that you will have a better feel for your next language or computer.

Most people that get hooked on computers will go through many languages and many different computers in their lifetime. It will help a lot if what you learn now will carry over to your next language or computer.

Because I think one of the important topics that deserves to have the mystery removed is programming languages, I hope to present a series of projects that give you a glimpse inside how computer languages work. These will not be full blown languages, but they will be useful and they will show you what goes on inside your computer. Once you see how these work, you will have a better understanding of your favorite language.

Well the time has come for me to climb down off of my soap box for the day and get on with this months program. I had promised you that I would use more BASIC and that I would show you an example of an iterative technique. The program presented in Listing 1 uses the bisection method to find the root of an equation. The example given finds the square root of 3. Line 100 defines a function that evaluates our equation.

Notice the fnequ(x) in line 100, this tells BASIC that fnequ should be passed a value that it will use in the computation. A value that is passed to part of a program is called a parameter. BASIC's handling of parameters is fairly poor, and many people use BASIC without ever knowing about parameters. Other languages such as C and Pascal rely quite heavily on parameters and have very explicit rules about their use.

Parameters are one of the important concepts in programming. A parameter is a value that is passed to a portion of a program each time that

continued on page 150

```
100   def fnequ(x)=((x * x) - 3.0)
110   lo = 1.0 : hi = 2.0
120   def fnmidd=((lo + hi)/2.0)
130   loops = 0
140   flo = fnequ(lo)
150   fhi = fnequ(hi)
160   mid = fnmidd
170   fmid = fnequ(mid)
180   if ((flo * fmid)   0.0) then lo = mid else hi = mid
190   if (abs(flo - fhi)   0.0001) goto 240
200   goto 220
210   loops = loops + 1
220   if (loops   15) goto 270
230   goto 140
240   print "The answer is ";
250   print mid
260   goto 280
270   print "The program failed to converge in 15 trys"
280   end
```

Listing 1.

PC Service & Repair

Quick Turnaround, Quality Repair, Low Price

Mission Peak Systems has specialized in servicing PC sub-assemblies and systems to the component level for over 3 years. Our Quality, Support, Price and Simple program is unsurpassed.

1. **Quality** – Mission Peak stands behind every repair. We have over 500 dealers and 2000 satisfied customers working with us.
2. **Fast** – Our turnaround is only 3 days maximum. In most cases we exchange your part the same day we receive it.
3. **Simple** – You do not call in for RMA #'s. Just send the part in with a packing slip and we do the rest.
4. **Price** – We are probably the lowest cost repair shop in the country.
5. **Support** – We offer the best technical support. If you need help solving a problem, call our techs.

If you care about your downtime, Quality the first time, and low price everytime, Mission Peak is the place to be for all your PC service needs.

We specialize in IBM, CPM machines, Diablo and Okidata printers.

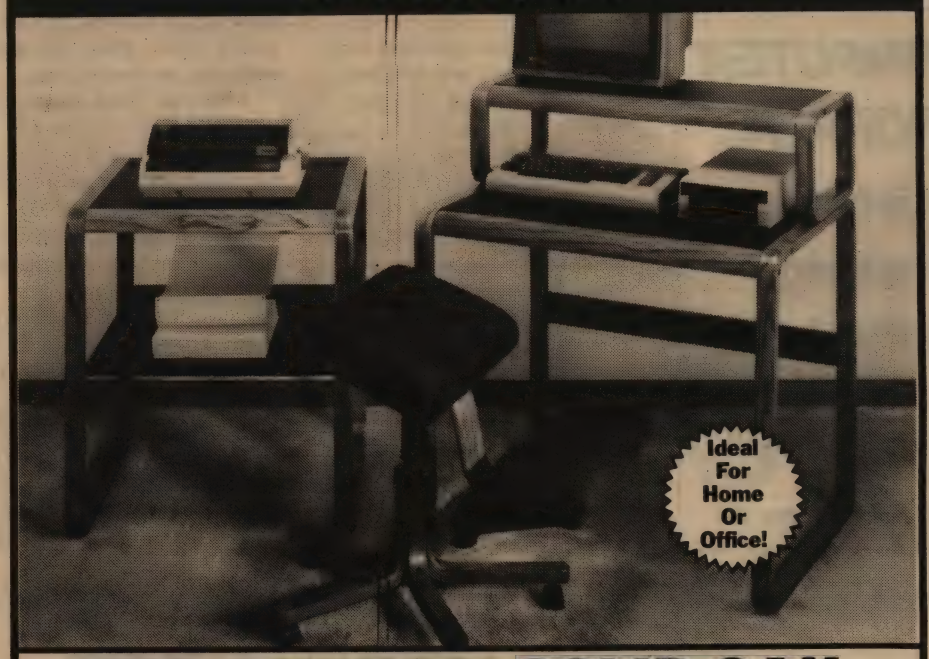
MISSION PEAK SYSTEMS

196 WHITNEY PLACE
FREMONT, CA 94539
(415) 490-5003

VISA MasterCard

COMB

Authorized Liquidator



BIG SAVINGS! SOLID OAK COMPUTER FURNITURE!

Organize your computer equipment for more efficient operation by using these attractive matching furniture pieces!

The manufacturer decided to discontinue these models when new styles were added to its line. As a result, we are able to offer this contemporary SOLID OAK furniture at unusually low prices! All pieces come ready for easy assembly.

COMPUTER DESK

- Sturdy solid oak framework with attractive curved front edge.
- Non-glare slate-look work surfaces.
- 10" x 31" hutch and main work area.
- Hutch rises 7⅛" above main work area.
- Size: 37" H x 31" W x 23" D.

Mfr. List: $121.00

Liquidation Price $59

Item H-1543-4963-005 Ship, handling: $9.00

PRINTER TABLE

- Provides extra storage space you need in a functional manner.
- Sturdy solid oak framework with attractive curved front edge.
- Non-glare, slate-look work surface on top shelf.
- Large bottom shelf with paper feed. (20¾" x ½").
- Size: 28" H x 23¾" W x 24½" D.

Mfr. List: $115.00

Liquidation Price $49

Item H-1543-4963-013 Ship, handling: $9.00

MOBILE POSTURE CHAIR

- The answer to sitting fatigue.
- Special design lets you sit up naturally straight.
- Helps reduce effect of gravity on your back muscles.
- Fully padded knee rest and seat allow you to sit in comfort for hours.
- Ideal as computer or typing chair.
- Chair swivels and rolls on casters for easy mobility.
- Sturdy solid oak five-blade base.
- Handsome brown upholstery.

Mfr. List: $110.00

Liquidation Price $49

Item H-1543-8150-005 Ship, handling: $9.00

SEND TO: Item H-1543
C.O.M.B. Direct Marketing Corp.
1405 Xenium Lane No./Minneapolis, MN 55441-4494

Send the items indicated below. (Minnesota residents add 6% sales tax. Sorry, no C.O.D. orders.)

Send ___ **Computer Desk(s)** Item H-1543-4963-005 at $59 each plus $9 each for ship, handling.

Send ___ **Printer Table(s)** Item H-1543-4963-013 at $49 each plus $9 each for ship, handling.

Send ___ **Posture Chair(s)** Item H-1543-8150-005 at $49 each plus $9 each for ship, handling.

☐ My check or money order is enclosed. (No delays in processing orders paid by check).

Charge: ☐ VISA® ☐ MasterCard® ☐ American Express®

Acct. No. _____ Exp. ____/____

PLEASE PRINT CLEARLY

Name _____

Address _____

City _____

State _____ ZIP _____

Phone (____) _____

Sign Here _____

COMB COMB COMB COMB COMB COMB

Hacking The ST
continued from page 149

portion is run. The actual value passed may be different every time that portion is run.

Note the way the function was defined in line 100. Since I wanted to find the square root of three, I had to write the function in such a way that the function was 0.0 when the value I passed to it was the square root of three. The easiest way to do this was to square the value passed to it and subtract 3 from the result.

You may wonder why I have written 3.0 in line 100. If you write 3.0 instead of 3, it helps others to read the program. This is important in languages such as BASIC and FORTRAN that have poor type checking. Strong type checking is one of the advantages of structured languages.

In a language with strong type checking, you have to tell the program what kind of value each variable can hold. Integers are not reals and reals are not integers. BASIC uses reals for all values, so it helps to tell the reader if you are using a certain variable as an integer or a real.

Line 110 sets a lower limit and a higher limit. Lines 100 and 110 are the lines that need to be changed if you want to perform a new calculation. Line 120 defines a function that computes the midpoint of our range.

The Bisection method is the simplest iterative root finding technique around. In spite of it's simplicity, it does a fairly good job for small intervals. The way it works is really very simple. I know that 1 squared is 1 and that 2 squared is 4, therefore the square root of 3 must be between 1 and 2.

For each computation, we need to set a lower bound and an upper bound, this is done in line 110. What the Bisection algorithm does is to divide the interval from lo to hi into two equal parts. The answer we are looking for should be in one of the two parts.

The trick comes in deciding which of the two parts the correct answer lies. To find out which half the true answer lies in, we evaluate the function at the lo end, the midpoint and the hi end.

To select the correct half of the interval, we note that since the function evaluates to 0 at the correct answer, in general if we move a little to one side of the correct answer we will be less than 0 and if we move to the other side of the correct answer, we will be higher than 0.

Line 180 looks at the lo end and the midpoint. If they are both on the same side of the correct answer, the correct answer lies in the interval from mid to hi. If they are on opposite sides, then the answer must be between them.

After we have selected the correct interval in line 180, line 190 checks to see if we are close enough to a correct answer to stop looking. If we are still looking at a large interval, we perform one more important check.

Line 200 keeps track of how many times we have divided the interval in half. If we have divided the interval in half more than 15 times without getting close to the answer, we may be stuck in a loop that we will never get out of. The test in line 210 allows us to regain control of the computer without having to reboot. (Or hit a control C).

To find the root of a different equation, you have to change line 100 and line 110. Let's change the programs so that it computes the cube root of 8.75. Since 2 cubed is 8 and 3 cubed is 27, the correct answer must lie between 2 and 3. Our new line 100 would be:

```
100 def fnequ(x) = ((x*x*x) - 8.75)
110 lo = 2.0 : hi = 3.0
```

The program can be used to find roots of all kinds of equations, the thing to keep in mind is that the function defined in line 100 must be 0 when it is passed the correct value. You must also start with an interval that contains the root. That means that lo should be less than the correct answer and hi should be more than the correct answer.

As one last example, we will modify lines 100 and 110 so that we can find the answer to 4 x cubed plus 9 x squared plus 5 x equals 11.

First we rearrange the equation so that it equals 0 when passed the correct answer. This means that we simply subtract 11 from both sides of the equation.

We now have to find a lower and upper bound for the interval. If x is 0, our function is −11, and when x is 1, our function is 7 so a good guess on the interval is 0 and 1. Our new lines 100 and 110 are:

```
100 def fnequ(x) = ((4.0 * (x3)) + (9.0 * (x2)) + (5.0 * x) - 11.0)
110 lo = 0.0 : hi = 1.0
```

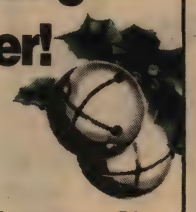
If you run the program, you will find that x is 0.76947. (Plus or minus 0.0001.) The nice thing about iterative techniques is that very often they can produce exceptionally good results with very simple codes.

Our program is only 18 lines long (with no real effort to cram as much as we could on a single line) and can find the roots of very complex equations in a matter of a second or two!

We start off with an interval that we know contains the root, and by dividing the interval in half and selecting the correct half, we "squeeze in" on the correct value as close as we need to.

Iterative techniques are very important for number-crunching and scientific programming. Often FORTRAN is used for scientific programming, and there are packages of FORTRAN routines sold to help in solving many numerical problems. In future columns, I'll pass along some more routines in BASIC for the ST that can be used to solve these same kind of problems. ●

COMPUTER SHOPPER...
A Great Stocking Stuffer!



See details on page 54.

IBM AT&T COMPAQ

We exceed all manufacturers' warranties by 1 Month

20 - 40% off

"Service is Our Forte"

Call for pricing on all available configurations.

SUMMER SPECIAL
*** AT & T 6300 ***

- 25% Faster than IBM
- Fully IBM Compatible.
- Call for pricing on YOUR configurations.

WE OFFER MORE THAN BOXES

On Staff Specialists in:
Point of Sale Software, Manufacturing, CAD/CAM, Retail.
Multiuser, Networking, Desk Top Publishing.

Peripherals by:

Seagate, Rodime, Okidata, Toshiba, HI, HD, Calcomp, etc.

CBN

Computer Business Network
16 East State Street • Redlands, CA 92373

Designers of Complete Integrated Systems

1-800-523-3763 in CA only
714-798-5620

*** Shipping Paid On All Prepaid Orders**

When you want to talk computers. When you want to talk price!

PC too

PC-XT COMPATIBLE COMPUTER

- XT Chassis, 256K MB expandable to 640K
- 150 Watt Power Supply
- 84 Key XT Compatible Keyboard
- Floppy Disk Controller
- 360K Floppy Disk Drive
- IBM compatible with 8088 chip speed of 4.77 Mh
- 8 Expansion Slots
- Full 90 Day Warranty
- 30 Day Money Back Guarantee

MONITOR OPTIONAL

$539.00

OPTIONS AND ACCESSORIES

Dual Teac 55B Floppy Drives.....$149.00
10 Meg Hard Disk and Controller.....$379.00
20 Meg Hard Disk and Controller.....$459.00
RGB Color Video Card w/Printer Port.....$89.99
Monochrome Graphics Video Card w/Printer Port..$89.99
640K Memory Upgrade.....$79.99

IDEA Associates
IDEAMAX
Multifunction Card
384K, Clock, Serial & Parallel Ports
$189.00

NEC 1216
RGB Color Monitor
640 x 240 Lines
$299.00

LEGEND 1385
PRINTER
160 cps, NLQ
$339.00

DATASHIELD
5100 Surge Protector
6 outlet, Low Voltage Alarm
$79.99

CMS
20 Mb INTERNAL HARD DRIVE KIT
$459.00
includes Western Digital Controller

MAGNAVOX
12" Monochrome Monitors
• Green or Amber • Audio
Your Choice **$79.99**

BERNOULLI BOX
20 + 20 MB
Dual 20 MB System
$2499.00

POLAROID PALETTE
Computer Imaging System
$1399.00

TAXAN 220
14" Color Composite MONITOR
Amber/Green Switch
$179.00

PARADISE
AUTO SWITCH EGA VIDEO ADAPTER
$379.00

MAGNAVOX 12" TTL
MONOCHROME MONITOR
GREEN OR AMBER DISPLAY
YOUR CHOICE **$99.99**

MOUNTAIN
20 MEGABYTE "DRIVECARD"
$699.00

COMPUTER MAIL ORDER

CALL TOLL-FREE 1-800-233-8950

477 East Third Street, **Dept. A510,** Williamsport, PA 17701

Educational Institutions Call Toll-Free 1-800-221-4283

MasterCard VISA AMERICAN EXPRESS DINERS CLUB

POLICY: Add 3% (Minimum $7.00) shipping and handling. Larger shipments may require additional charges. Personal and company checks require 3 weeks to clear. For faster delivery use your credit card or send cashier's check or bank money order. Pennsylvania residents add 6% sales tax. All prices are subject to change and all items are subject to availability. Defective software will be replaced with the same item only. Hardware will be repaired or replaced at our discretion within the the terms and limits of the manufacturer's warranty. We cannot guarantee compatibility. All sales are final and returned shipments are subject to a restocking fee.

1-800-268-3974 Ontario/Quebec
1-800-268-4559 Other Provinces

CANADIAN ORDERS
All prices shown are for U.S.A. orders.
Call the Canadian Office for Can. prices.

1-416-828-0866 In Toronto

Telex:06-218960
2505 Dunwin Drive,
Mississauga, Ontario
Canada L5L1T1

Maps & Legends and A Database, Too

Maps & Legends Screen

by H. Clark Robbins

Educational software is becoming available for the ST in many forms. This month I will review Maps & Legends—The Cartographer. I will also review the long overlooked H&D Base, a full-feature data base for the Atari ST.

Maps & Legends is a program that provides maps for your games or simulations. Maps & Legends contains nearly 9000 sets of geographic coordinates which outline land masses of Earth. You can select the area, the mapping style and the scale. In a few minutes a map will be displayed for you.

The document provides step-by-step instructions to make a sample map. To create a map, you must go through the pull-down menus provided. Once any entry is made from a pull-down menu, the menu disappears. If another entry was desired from the menu, you have to select the menu again.

To follow the example in the document, you select "Graticule" from the "Options" menu because you would like a latitude-longitude grid for the map. You then select the map style "Projection," also from the "Options" menu. With this selection you will find yourself in a dialog box in which you will enter the latitude and longitude of the center point of your map, along with the azimuth and altitude.

The document describes the use of dialog boxes. With such an explanation, one wonders why they bother using them for number entries and simple selections. Once the entry is complete, the map will begin to appear on the display.

When a map has been created for you, you can select from many fill patterns and fill the areas of interest. The land masses and water are not differentiated automatically. I was surprised that this was not done, since everyone is going to want to do it anyway. It is a simple matter, as long as you know what is water and what is land. Eight fill patterns are provided: That should be enough for virtually any application.

With your map complete, you can add text with another selection from the "Options" menu. You can select the line style of choice and start adding text. Until you move the mouse, you can very easily backspace over mistakes and start over if you like. With the text added to your map, it is complete.

You can still make additions, you can select a line style and draw a star in your state's capitol. Or you can just draw your signature at the bottom of the map.

You can "draw" with a pen or eraser. Three line styles are provided: fine, medium, and broad. Fine and medium are used for most applications, but broad (the width of a crayon-line) could be very useful in work with the visually handicapped or any time heavy lines would be needed.

You can print your completed map from Maps and Legends, or you can save it on disk for later use. The document warns you, though, it must be saved on a separate disk, since there is very little room to spare on the program disk. Maps are saved in Degas file format, so if more graphics work is desired it is easily done from Degas.

Maps and Legends allows you to load files created earlier. You can modify them and resave them, but if you find you have made mistakes, you can select "Abandon" from the file menu to return you to the unaltered copy of the file.

By using some of the GEM features, it is also possible to display several maps at a time. The smaller maps can be saved as a single file for later use.

The documentation on disk provided with Maps and Legends is very good. Knowing that most of the Maps and Legends users will have little knowledge of cartography, the authors clearly detail the features provided and includes an explanation of the projection options available. The explanations are thorough enough to help you choose between the map-making tradeoffs: what will be sacrificed in your effort to make a spherical world flat. The authors thought enough of the users to include the math associated with each of the projection styles.

My only complaint with the documentation for Maps and Legends is that it takes the form of on-line help instead of a standalone document. The easiest way to use the program is to print all the help documents and read them as you work. As on-line help, they are too bulky: on-line help should be a brief quick-reference. In low res mode, the on-line help is not available at all.

Maps and Legends is not copy protected, which allows you to back up your copy and put the original away. The document is precise and well-written. The user won't feel as though the authors were talking down to him. The reliance on the GEM interface makes the program slow and big, but that is becoming the norm in ST software.

Maps and Legends is a reliable piece of software that should be especially useful in homes with children. Since the land masses can be displayed with no political boundaries, this can show users the world in a different light.

Maps and Legends—The

continued on page 159

PC SPEEDUP

NEW PRODUCT! — PC-Sprint —$89.95

Exec-PC is the specialist in low cost PC speed enhancement.

PC-Sprint™-	Works with any PC, color or mono. 4.77, 6.67, 7.38mhz. Speed and reset switch. Plug-in installation	- $89.95
Surprise!™-	from Maynard Electronics. Run any 8088 PC at 9.54mhz. Change speeds from Keyboard. No expansion slot used. 100% compatible.	- $249.00
V20 8mhz -	Replaces 8088 up to 8mhz (6 or more, $12.76 or $10.00 with PC-Sprint)	- $19.95
V30 8mhz -	Replaces 8086 up to 8mhz (6 or more, $12.76)	- $19.95
V20/V30 Tech manual - 224 pages, sold with chip order only		- $7.00

Dealer Inquiries Invited.

Al' oroducts include chip removal tool, user guide, 90 day warranty, free BBS trial subscription, no extra charge for credit card or shipping. ($10.00 minimum on charge orders.)

PC-Sprint™ — THE ORIGINAL

FREEWARE HARDWARE PC SPEEDUP

Run your PC at 7.38 megahertz. Fully compatible with color, mono, EGA, even Compaq. No expansion slot required. Change speeds on the fly. Speed/hardware reset switch included. Norton SI with V20 at 7.38 mhz yields 2.8 (PC=1.0).

Sold by popular demand, priced in the spirit of Freeware.

$89.95

PC SPEEDUP

Surprise!™

Bringing you the latest in speedup products, Exec-PC introduces the new Surprise!™ from Maynard Electronics. Run your PC at 9.54 megahertz, selectable from keyboard. No expansion slot used — no soldering required. Includes DOS accelerator software to complement Surprise!™ hardware. Compatibles option available.

We love the name — you'll love the performance.

Dealer Inquiries Invited $249.00

Exec-PC, Inc. P.O. BOX 11268 SHOREWOOD, WI 53211

ORDER HOTLINE (414) 242-2173 RECORDED INFO (414) 242-2165 ORDER BY MODEM (414) 964-5160

DAISY WHEEL PRINTERS

$175.00 (Inc. Frght.)

STILL IN ORIGINAL CARTONS

BRAND NEW!

Towa Printex R1 Daisy Wheel Printers. Parallel Centronic. 18 CPS. 96 Character Qume Wheel. Cartridge Ribbon. 10/12/15 Print Spacing. Impression Control. 13.4" Carriage. Bidirectional. 6/4/3 Lines Per Inch. Friction Feed. Weight 25 lbs. 20"W, 15"D, 6"H. One Year Warranty.

TRACTOR FEEDS $65.00 FRGHT. PAID (available only with printer purchase)

Look for write-up of Towa Printex in Printers Buyer's Guide and Handbook, Guide #2 Issued in December 1985.

Send self addressed stamped envelope for brochure or call for details. Certified Check, Bank or Money Order. Allow two weeks for personal check clearance. Sorry, No COD's or Credit Cards.

FIVE PERCENT DISCOUNT FOR FIVE TO NINE UNITS

TEN PERCENT DISCOUNT ON TEN OR MORE UNITS

LCM ASSOCIATES
3632 N.W. 107TH. TERRACE
GAINESVILLE, FL. 32601
1-904/332-0607

Flash

by W. Krieger

Flash is a new telecommunication program for the Atari ST line of computers, written by Joe Chiazzese and Alan Page, published by Antic software ($39.95, 524 Second Street, San Francisco, CA 94107).

Flash is a feature laden GEM based program. With Auto dial, Auto log on, VT100/52 emulation, compatibility with Compuserve's vidtex graphics, Xmodem file transfer using either CRC or checksum, built in word processor and more.

One quick note, this review is on the patched version of Flash. The original version 1.0 had a few minor bugs that have been fixed with a patch program available on Compuserve. If you aren't a member of Compuserve don't worry, Flash comes with a Compuserve IntroPak with more than enough free Compuserve time to down load the patch program. Also the patch program is public domain and can be found on many BBS's that have ST sigs.

This is a powerful program that takes some time and effort to master. Not that Flash is difficult to use or poorly laid out, it's just with all the features and options, this is not a program for people who won't read the documentation. Once you've read the manual and spent a couple of hours using the program it's easy to work with.

The documentation is acceptable but it's not the best I've ever seen. Be prepared to read parts of it a couple of times.

The section on Do files (Do files are Flash's way of implementing a script language for automating the program) needs to be read carefully.

One thing I had some problems with is that Flash uses a vertical bar "|" to denote a return in a script file. If you look at your ST keyboard there isn't any vertical bar key.

There is a key that gives you a vertical bar, the shifted backslash key "\", but it took a bit of time to figure it out. You can't do script files without sending returns and nowhere in the documentation do they point out that the broken line is a vertical line on the Atari keyboard.

The really good thing about the documentation is section eight, the Flash Reference Guide. This gives all the Flash commands in alphabetical order and the parameters for each command. There are about seventy commands and the reference guide takes up nineteen pages of a fifty page manual. Flash is not the simplest telecommunication program available for the ST.

Flash is set up as a two screen program. The primary screen is the terminal mode which is an 80 column and 24 line screen with a status line. The second screen is a standard GEM window, with slider bars and pull down menus and is referred to as the capture buffer in documentation.

It is called the capture buffer because it defaults to a window on the capture buffer. A better name might be the edit screen. With the editor provided you can do simple text editing, it's mainly designed for E-mail, and for creating the "DO" files that Flash needs for automating log ons. The drop down menus in this mode allow you to edit the phone directory and to set any of the many parameters, baud rate, full or half duplex, etc. All telecommunications are suspended while in this screen, you can only access remote systems via the terminal screen.

The terminal screen can be set to any one of three modes, Atari VT-52 emulation, ANSI VT-100 emulation, or VIDTEX for use with Compuserve's RLE graphics. The VT-52 mode is the default and is fine for most applications. The ANSI or VT-100 mode is not a full VT-100 emulation, it doesn't support some of the less used VT-100 graphic features such as underlining, blinking or highlighting of characters, nor does it have 132 column mode. It is fine for most applications requiring an ANSI terminal. One member of my user's group uses the patched version of Flash on a regular basis to access his company's Vax system, and he says he has no problems running EDT or anything else he commonly uses.

The Vidtex mode allows you to view RLE (Run Length Encoded) graphics on Compu-

continued on page 158

Software at a Price You Can Afford

SDC

For the IBM PC

For four years, Software Distributors Clearinghouse has been collecting and testing Public Domain and Shareware software for the IBM PC. Thousands of programs have been distributed throughout the U.S. There are several good reasons why PC owners buy from SDC:

1. **SDC tests all the software it distributes.**
2. **SDC continually adds new programs.**
3. **SDC offers discounts on registration for selected Shareware programs.**
4. **Money back guarantees--if you're not satisfied, return your diskettes for a refund.**

SDC COLLECTION DISKETTES

These 5 diskettes have the best small programs collected from many diskettes.

- ☐ **GAMES #1**: More than 20 games.
- ☐ **GAMES #2**: SDC collection of arcade games. For PC's and PCJR.
- ☐ **GAMES #3**: SDC collection of arcade games for PC's only.
- ☐ **FINANCIAL COLLECTION**: Best small financial programs.
- ☐ **EDUCATION/UTILITY COLLECTION**: Several good educational programs plus a number of useful utilities.

- ☐ **PC-WRITE**: Excellent word processor. Special registration discount through SDC.
- ☐ **TURBO SPELLER**: Works with most word processors.
- ☐ **PC-KEY DRAW**: Super graphics CAD program.
- ☐ **PC-KEY-DRAW FILES**: 40+ pre-drawn files for use with Key-draw.
- ☐ & ☐ **FILE EXPRESS PROGRAMS AND DOCUMENTATION**: Excellent, easy to use database program. Better than PC-FILE.
- ☐ **PC-MUSICIAN**: Interesting program to write/play music.
- ☐ **PC-PROFESSOR**: Learn Basic programming.
- ☐ **GINACO**: Longtime favorite collection of over 50 programs.
- ☐ **ULTRA-UTILITIES**: Disk recovery utilities plus data base program.
- ☐ **PC-DESKTEAM**: Ram resident program includes 9 desktop tools.
- ☐ **PC GENERAL LEDGER**: Complete accounting system.
- ☐ **MICRO-ACCOUNTING**: Multiple purpose check register accounting system.
- ☐ **PC-PICTURE**: **Graphics draw/paint program.**
- ☐ **GENEALOGY**: Genealogy program.
- ☐ **PC PRINT CONTROL**: Online control over your Epson or compatible printer.
- ☐ **NEWKEYS**: Change functions of keys.
- ☐ **QMODEM**: Outstanding communications program.
- ☐ **TIME & MONEY**: Budget/Financial record keeping system.
- ☐ **EPISTAT**: Over 24 statistical programs.
- ☐ **SDC USER'S GUIDE**: A thirteen page guide written by SDC for beginners. Identifies documentation files on all SDC diskettes, explains directions on copying files, loading basic and other helpful hints for using SDC's diskettes.
- ☐ **SDC CATALOG DISKETTE**: Diskette with a menu driven program allowing you to view the complete directory of all of SDC's diskettes. Lists files on each diskette. Also contains SDC's popular Name and Address/label program. Catalog diskette is **FREE** with order of five or more diskettes.

SOFTWARE DISTRIBUTORS CLEARINGHOUSE

3707 BRANGUS
GEORGETOWN,
TEXAS 78628

Name _____

Address _____ Ph. _____

City _____ State _____ Zip _____

Signature _____

Card No. _____ Exp. _____

_____ Diskettes @ $5.00 each _____

_____ SDC Users Guides @ $2.00 each _____

_____ Blank diskettes @ $1.10 each _____

Postage and handling $3.00

Texas residents add 4 1/8 % Sales Tax _____

Overseas orders add $10.00 _____

☐ VISA ☐ M/C ☐ CHECK TOTAL _____

EPROM ERASER

$34.95

- Smallest size
- Lowest price
- Fast erase
- Metal case
- All 24-28 pin Eproms

Also:

DATARASE/T
Auto turn off 2-8 min.
Internal Timer - $54.95

6 MONTH WARRANTY
Dealers Welcome.
Add $2.50 shipping & handling.

WALLING CO

4401 S. JUNIPER TEMPE, AZ 85282 (602) 838-1277

CAD-3D: A New Dimension for the Atari ST

by John J. Anderson

Computer-assisted design is now an important element of our technology. Running on computers and workstations costing hundreds of thousands of dollars, CAD software speeds the process of industrial, electronic, and architectural design, and minimizes costly mistakes. By initially creating a part, circuit, or building within the confines of a computer dataset, analysis and troubleshooting can take place before the expense and time necessary for commitment to a physical prototype.

Up until recently, however, CAD was something most people saw in TV commercials for Chrysler or in a PBS special.

With the advent of the microcomputer, interested folks have been able to give themselves a real taste of the computer revolution, including computer-assisted design. But CAD on an 8-bit machine is a very limited experience. It requires tedious numeric entry of coordinates, and often returns intense efforts with disappointing results—poor resolution, slow speed, and restricted capabilities.

The 16-bit Atari ST series has brought a new level of microcomputer sophistication into the consumer market at an extremely competitive price. The extensive hardware capabilities of this machine are now complemented by *Tom Hudson's CAD-3D*, a CAD program from Antic Software that combines ease of use with the capability for truly sophisticated three-dimensional modeling.

CAD-3D runs in both monochrome and medium-res color modes. Because of the memory requirements of both program and constructed datasets, it requires either a 520ST with TOS in ROM, or a 1040 ST, in order to run. The program is unprotected, so archival back-ups are possible.

Using the conventions of the GEM interface, *CAD-3D* allows its user to create three-dimensional objects, then manipulate them on-screen. GEM windows, sliders, and pull-down menus simplify the process dramatically, along with a set of very powerful tools that impressively anticipate the user's needs. But among the most significant breakthroughs of the package is mouse-based entry of data coordinates. *CAD-3D* does not require the user to make dimensional calculations on his or her own, nor does it accept lists of numerical coordinates.

Rather, the program allows you to point and click the mouse—and thereby draw the object you want. It will lay down a cube, sphere, wedge, or torus for you automatically, and allow you to stretch, scale, and manipulate created objects with remarkable ease.

The default *CAD-3D* desktop splits the screen into four windows. These break down into four views, which are two-dimensional representations of the three-dimensional "universe" available to the user. The first in the "camera," which represents your selectable point of view toward any object. The others default to top, right, and frontal planes, that can be selectively toggled to bottom, left and back. The camera window makes no changes in an object itself, but rather your view of that object. Using sliders in the camera window, you can rotate the camera horizontally and vertically, as well as "zoom" in or out to varying levels of magnification. Another option available from the camera window is "perspective," which automatically foreshortens the view of any object to the degree you specify. It is especially useful in making objects seem massive.

Manipulation of an object in any other window other than the camera window makes

continued on page 155

EVSAN COMPANY (415) 991-1051

P.O.BOX 2143 DALY CITY, CA 94017

DYNAMIC RAMS

1 MEG	100ns	65.00
41256	100ns	4.75
41256	150ns	2.75
41256	120ns	3.10
4164	120ns	1.20
4164	150ns	1.00
4464	120ns	4.25
4464	150ns	3.95
4116	150ns	.98

SPEED UP YOUR IBM PC 20-30%
REPLACE 8088/8086 with:

V-20	8mhz	9.95
V-20	5mhz	8.95
V-30	8mhz	11.00

EPROMS

27512	250ns	18.75
27256	250ns	5.50
27C256	200ns	7.10
27C256	250ns	6.75
27128	150ns	5.75
27128	250ns	3.60
2764	200ns	3.75
2764	250ns	3.20
27C64	200ns	4.90
2732A	200ns	3.90
2732A	250ns	3.50
2564	450ns	7.50
2532	450ns	4.10
2716-1	350ns	3.70
2716	450ns	2.95
2708	450ns	2.50

8000's

8031AH	5.25	8243	2.00
8035	1.95	8250A	3.95
80C35	3.75	8251A	1.65
8039	2.50	8253-5	1.75
80C39	4.00	8254	3.50
8085A	1.75	8255A-5	1.80
80C85	3.75	8272	3.50
8086	5.00	8274	4.75
8155	1.60	8284	2.95
8156	2.25	8288	5.25
8212	1.60	8748H	6.25
8216	1.50	8749H	8.25
8226	1.75		
8237A-5	4.75		

INTERFACE

1488	.32	1489	.32

PRIME PARTS 100% GUARANTEED

MATH CO-PROCESSORS

C8087-2	8mhz	142.00
C80287-6	6mhz	168.00
C80287-8	8mhz	275.00

STATIC RAMS

43256L	120ns	25.50
6264L	100ns	3.95
6264L	120ns	3.60
6264L	150ns	2.85
6264P	150ns	2.65
6116P	150ns	1.45
2016B	100ns	1.75
4016	150ns	1.60
4016	200ns	1.30
2114A	120ns	1.50
6147	35ns	3.25

COLOR GRAPHIC CONTROLLER:

D7220AD	18.50

MOTHERBOARDS

XT Motherboard	$ 149.00
XT TURBO BOARD	210.00
AT Motherboard	999.00

IBM COMPATIBLE INTERFACE CARDS

Floppy Disk Drive Adaptor	$ 45.00
Color Graphic Adaptor	80.00
Monographic Card	99.00
Multifunction Cards	95.00

FLOPPY DISK DRIVES

TEAC 5¼" FD55B	94.00
FUJITSU 5¼" M2551	82.00

DIGITAL REAL TIME CLOCK

5832	2.80
6242	4.90

Z80 FAMILY

Z80A CPU	4mhz	1.20
Z80A CTC	4mhz	1.20
Z80A PIO	4mhz	1.20
Z80A DART	4mhz	2.75

STATIC RAMS

5564PL	150ns	5.25
5565PL	150ns	3.25

PROMPT DELIVERY

TERMS & CONDITIONS:
1) Visa & Mastercards Accepted with 3% surcharge.
2) Prices subject to change. PLease call for current & volume pricing.
3) Shipping & Handling (1 lb)
UPS Surface $3.00
UPS 2nd Day $4.50
California Residents add 6.5% sales tax.

OFFICE HOURS:
Monday thru Friday 7:30AM - 5:30PM
Saturday 7:30AM -12:00Noon

Data Sheets: $0.25 each

Quarterly Flyers available, please call

We reserve the right to substitute manufacturer. All merchandise subject to prior sale.

THE WALL STREET SOFTWARE DIRECTORY

"The Financial Shoppers Guide to Investment Software"

is a new bi-monthly publication listing concise, up-to-date descriptions of over 400 investment software programs in over 30 categories of application.

Recognized for its unique and unbiased analyses, ***A Hard Look at Software,*** a regular feature, focuses on three programs with candid opinions from the professionals using those programs.

You'll be enlightened and entertained by ***Interfacing With Publishers*** every issue as you read provocative interviews with leading industry personalities. Our editors will provide thorough evaluations on a broad range of topics to aid your decision making process.

This valuable shoppers guide to investment software is being offered at a special introductory price of only $18.00 for a full year subscription. **Computer Shopper Readers** may receive a complimentary sample issue by sending this advertisement with the request.

To subscribe today, just send your name and address accompanied by a check to:

Grinde Group Limited, WSSD Subscription Dept., Woodstock Valley, CT 06282.

CAD-3D
continued from page 154

"actual" changes in the object itself. You can rotate and/or scale an object horizontally or vertically in whichever plane you select, as well as move it around within that plane. Using *MacPaint*-like conventions, you can duplicate objects, then select and "drag" them to new locations. But *CAD-3D* is more like *MacDraw* than *MacPaint* in its power—it is "object-oriented"—which means that each object is discrete, requiring its own object name. Using a clever set of pull-down menu choices, manipulation of multiple or single objects is clarified, and made as nearly intuitive as possible.

In addition to pre-stored geometrical shapes, two very powerful shape-generation tools simplify the design process. The first, called *extrude*, allows you to define a shape in two dimensions using the mouse, then to pull that shape out in a third dimension to whatever length you would like. *Extrude* works in a manner somewhat analogous to a jigsaw. If you wanted a three-dimensional letter "e," for example, all you would need to do is draw the letter conventionally in the extrude window, set its thickness to your liking, then select "do extrude." And there is your three-dimensional letter. *Extrude* creates cubes, girders, and wedges with ease.

Spin is an even more powerful tool than *extrude*. It works very similarly, but rather than working like a jigsaw, it works like a lathe, providing you with a symmetrical *turned* object. It is the tool to use for creating objects such as bowls, goblets, fuselages, rings, and cylinders.

Once you have a set of multiple objects placed three-dimensionally, you may choose to *join* objects. They can be joined additively, which is like glueing them together, or subtractively, which allows you to "cut" one shape out of another. A third join function, called *stamp*, joins the silhouette of one object onto another across the faces of both that meet, rather like a rubber stamp. This feature allows you to *print* or *emboss* the faces of defined objects.

Four depictions are available for defined objects: wireframe, which depicts every line of the object as if it was modeled from wire; hidden, which plots the object with *hidden* lines suppressed, for a more realistic view; solid, which shades planes to create the effect of a sculptured object; and outlined, which superimposes a hidden plot over a solid plot. Another menu selection allows you to toggle between depiction of all lines or edge lines only.

In monochrome, *CAD-3D* provides high-resolution plotting and sophisticated grey-scale shading. In color, line plots are chunkier, but shading occurs in 14 shades of one color or seven shades of two colors. Colors are selectable from pull-down menus.

Three "spotlights" are available to illuminate depictions of solid objects, and their positions and brightness are user-selectable across the three-dimensional board. There is also an "ambient" light setting, providing a selectable brightness of diffuse light from all directions.

CAD-3D data can be saved in several ways. *Save all* saves all the three-dimensional objects in RAM to disk along with all current lighting settings. *Save group* saves only selected objects to memory, without lighting data. You can use this method of save to develop a library of "primitives" you can then use to create sophisticated shapes. Individual camera "superviews" can also be saved as screen dumps, and *CAD-3D* allows you to save them in *Degas, NEO*, or *C.O.L.R.* format.

A separate animation module on the program disk enables you to join object "superviews" into a chained animation. Alternatively you can chain *NEO* screens using another module included on the program disk. (*Degas* screens can be chained using a program that accompanies *Degas*.)

A number of impressive 3-D constructs are supplied as demos on the *CAD-3D* disk. These include a representation of the ancient monoliths of Stonehenge, and viewed in backlit shades of blue, they are very impressive indeed. Gary Yost of Antic provided me with another disk full of images, including pieces from a chess set that are magnificently rendered. More *CAD-3D* datasets are available for download on the AtariSIG of CompuServe, with new ones appearing all the time. Most reflect the growing skill of the program's creator himself, Tom Hudson, who deserves a real salute for both his programming and plotting prowess.

CAD-3D takes a bit of commitment to use, and even more to use effectively. Be prepared to sit with documentation in hand, engaging in many an exploration. But as opposed to any inexpensive CAD program I have seen to date, this one is truly worth the effort. The results are masterful. *CAD-3D* is without parallel in the world of low-cost microcomputer-assisted design.

That having been said I am loathe to nitpick, so let's call what follows a wish-list:

CAD-3D can be maddeningly slow, especially when "joining" multiple objects. In fairness, a slew of complex calculations are taking place during this time, and the code has been optimized to fit the constraints of the Atari ST. But there are times when you might actually fear that the computer has locked up, despite the provided window update-status headers.

The manual tries hard to be easy but thorough, but falls far short of the effort it attempts to document.

Mouse control is less than precise. This can not be blamed on Tom or his program, but

continued on page 156

Your Biggest Source for IBM PC/XT/AT Compatibles

6 MONTH REPLACEMENT WARRANTY

A WIDE RANGE OF QUALITY KEYBOARDS FOR IBM COMPUTER

PHONES ANSWERED 24 HRS. PER DAY

KB-5150 for IBM PC/XT **$50.95** **KB-5060** for IBM AT **$79.95** **KB-5151** for IBM PC/XT **$77.95**

DRAWER TYPE AND HINGED TYPE (LIFT-UP) CASES For IBM PC/XT/AT:

PC-500 Drawer Type XT $43.00 — AT $79.00

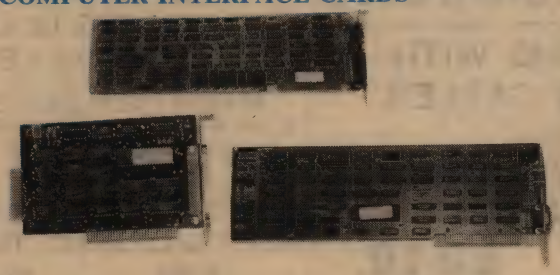
PC-700 Hinged Type $43.00 (Side Switch)

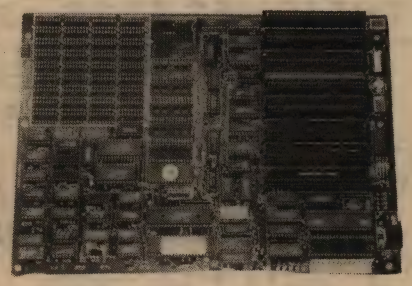
SWITCHING POWER SUPPLIES

No. 8510A Side Switch 135 W $74.00 150 W $79.50

No. 8511A: 200W for IBM-AT $130.50

COMPUTER INTERFACE CARDS





Y6-2008 B Mono. Graphic/Printer $69.95
Y6-2005 Color Graphic $63.95
Y6-2013 384K Multifunction, 0K $87.50
Y6-2001 Floppy Controller $35.50
Y6-2015 IO & II $64.95
Y6-2006A Disc I/O $94.50

MOTHERBOARDS W/BIOS, 0K
PC-88 256K $114.50
PC-90 640K $124.50
PC-92 640K Turbo (6.77 MHZ) $144.50
PC-94 640K Turbo (8.0 MHz) $154.50

WE ALSO CARRY A FINE LINE OF MONITORS @ $99.00. MODEMS, D-RAMS, DISC DRIVES PLUS MORE! WHY NOT CALL US TODAY?

IBM is a Registered Trademark of International Business Machines

VISA/MASTERCARD WELCOME @ NO ADDITIONAL CHARGE. PURCHASE ORDERS FROM QUALIFIED INSTITUTIONS. COD, CASH, CERT. CHECK OR MONEY ORDER ONLY.

IPS INFORMATION PROCESSING SYSTEMS, INC.
2470 JOE FIELD RD. • DALLAS, TX 75229
(214) 243-4221 • (214) 243-4222

O.E.M. AND DEALER INFORMATION PLEASE CALL (216) 461-7754

AMIGA

THE AMIGA TEXT-KIT	THE AMIGA SOUND-KIT	THE AMIGA GRAPHIC-KIT	THE AMIGA OFFICE-KIT
Amiga PC	Amiga PC	Amiga PC	AMIGA PC
RGB Monitor	RGB Monitor	RGB Monitor	RGB Monitor
256kB Memory	256kB Memory	256kB Memory	256kB Memory
ext. 3.5" Drive	ext. 3.5" Drive	ext. 3.5" Drive	ext. 3.5" Drive
Textcraft SW	Music Studio	Deluxe Paint	EPSON LQ-1000
Printer Cable	Midi Interface	Digi-View	Scribble
Epson FX-85	Sound Sampler	(Digitizer)	V.I.P. Prof.
	DX-21 Synthesizer	Okimate20	Gizmoz
US$ 2299.00	US$ 2949.00	US$ 2375.00	US$ 2849.00

Video Digitizer	$ 169.00	V.I.P. Professional	$ 139.00
Midi Interface	$ 65.00	Deluxe Paint	$ 69.00
Sound Sampler	$ 89.00	10 DS/DD 3.5" Disks	$ 22.00
Okimate 20-Kit	$ 239.00	PrinterCable	$ 19.00

EPSON® FX-85... $ 395.00 LX-90... $ 265.00 SQ-2000... $ 1799.00 FX-286... $ 595.00

...Over 50 Software Titles in Stock...

1-800-531-4747

IBM AT Compatible and Accessories

512kB Memory
Serial / Parallel Port
! AND 20MB Harddisk !
FOR ONLY $US 1995

1.2 MB Diskdrive
Clock w/ Battery Backup
30 Day Money Back Warranty
(suggested Retail US$ 2395)

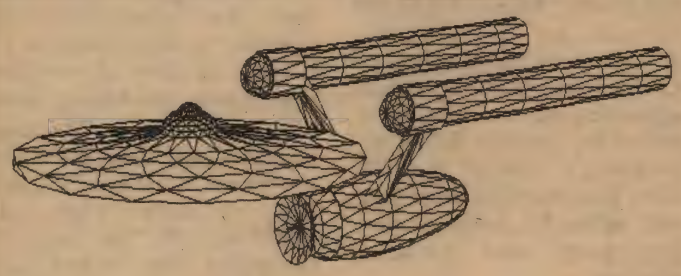
...Dealer/Corporate Inquiries Welcome...

InterComputing, Incorporated
2100 N. HWY 360, Suite #2005
Grand Prairie, Texas 75050

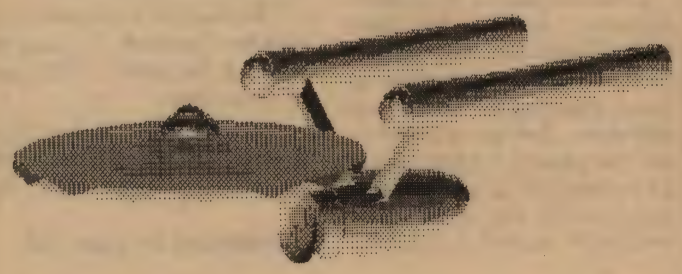
Phone : Metro 988-3500
Office Hours: 9am to 5pm
Telex: 5106000222 IC INC

CAD-3D
continued from page 155

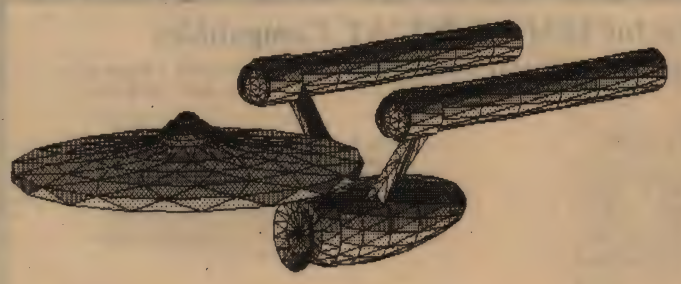
the ST hardware itself, which does not provide the same quality of "feel" experienced by Macintosh owners, for example. When manipulating objects, the mouse feels a little clunky. When clicking between windows, some clicks "take" and others don't, and this is discomforting. Perhaps someday we'll see a more precision input device.



Wireframe depiction: hidden lines suppressed



Solid: Shading depicted only



Starship Enterprise: Outlined solid object

Spin and *extrude* are superb tools, but if there were more tools, capabilities could be boosted substantially. Unfortunately, it is not exactly a pleasure designing forms with these tools. Even in "grid" mode, where points are supposedly constricted to discrete coordinates, it is all to easy to miss the mark. There are no cut and paste, mirror, or ruler tools to expedite design, ala *MacPaint* or *MacDraw*. Another constraint is that you must always draw in a clockwise manner. It would be wonderful if there was 2-D input as well as output capability—wherein you could move a *Degas* file into a top plane, for example, then super-extrude or or super-spin from there.

Though manual input of coordinates is a task I wouldn't wish upon a computer-literate canine, it is probably a limitation that the program does not provide for any kind of input other than that pointed-and-clicked by the mouse. Actual numerical input or some sort of "stick figure" or straight line drawing mode would provide new levels of sophistication to an already sophisticated product.

The animation modes are quite limited. Logically, the animation module slows in direct proportion to the complexity of the objects it depicts. As a result, all but the most simple renderings are slowed to a crawl. By loading *NEO* images into a RAMdisk, you can achieve impressive animation effects, but of course your number of frames is then limited to the size of the disk cache.

With a tolerably quick hard disk drive, the animation capabilities of the program are significantly increased.

Again, it would be unfair to lay this at the feet of *CAD-3D*, which accomplishes a remarkable amount with the hardware available to it. The fact is that even the ST can do only so much. Of course when one stumbles upon a program as good as *CAD-3D*, one is left thinking "well, if only it could do this," and "gee, if only it could do that." One can only hope that RAM constraints will soon crumble, disk-packing techniques will soon improve, hard disks will soon be inexpensive and available, the new blitter chip will soon advance the cause of ST graphics, and new revs of the software will eventually appear.

When building animation files, there is no logging, step-through, or backtrack capability, nor is there extensive error-checking of any kind. You don't know what you've got until it's in the can, so to speak, and you exit *CAD-3D* to go have a look at it, or until you've already errored out.

While there is a "merge" feature which allows new objects to be loaded without clearing those in memory, there is no "macro" or "primitive" support to help the design process along. It would surely be nice if one could load one's own set of primitives in the same manner as those Tom has made available as default cubes, spheres, wedges, and toruses.

Now that the "if-onlys" have been addressed, let's reiterate what a capable, powerful, impressive program *CAD-3D* truly is. Every program has limitations, and *CAD-3D* accomplishes a great deal despite its limitation set, taking full advantage of the powers of the Atari ST in the process.

In a phone call to Gary Yost, I asked what was in store for *CAD-3D* in the future. He told me that a module would be available next year to present three-dimensional models in "stereo"—that is with 3-D glasses, to make objects float out in front of the monitor screen. Before you groan, note that we are *not* talking about red/blue or even polarized lenses, but rather high-speed liquid crystal shutter lenses, oscillating electronically at 1/60th of a second (higher than that detectable to the eye). This technology was pioneered by Sharp in Japan, and I have personally experienced how impressive it is in rendering 3-D NTSC video. The glasses sync with screen refresh for the ST, which alternates between left and right eye views. Gary assures me a prototype is up and running, with very dramatic results.

The next step after that? Interface to a three-dimensional plotter, of course. Put a cube of wax into it rather than a sheet of paper, and watch it whittle your flights of fancy into actual three-dimensional sculpture.

We'll be keeping an eye—make that both our eyes—on the talented Tom Hudson. ●

Call for Latest Prices!

20 MEG TAPE BACKUP... $529.

SPECIAL!!!

15 MEG FULL HT. HARD DRIVE $209.

1/2HT 10 MEG $219. 20MEG $329.

HARD DRIVE SYSTEMS WITH PC CONTROLLERS & CABLES

EXTRA SPECIAL!!! Internal Systems (add $125. for External)

SEAGATE and MINISCRIBE

15 MEG Full Hgt. $319.
10 MEG 1/2 Hgt. $329.
20 MEG 1/2 Hgt. $409.
30 MEG Capacity $499.

6/12 MONTH WARRANTY HARD DRIVES

FLOPPY DRIVES

TEAC DS, DD $99. FUJI DS, DD $87.
CHINON quiet, low power DS, DD $89.
AT 360 $92. 1.2MEG $125. 800K $119.

1 YR. WARRANTY ON FLOPPY DRIVES

TANDY 1000 HARD DRIVES

10 MEG $385. 20 MEG $489.
20 MEG 1/2 LENGTH HARD CARD $675.
MEMORY CARD WITH 512K+DMA $149.
MULTIFUNCTION CARD $96.

HARD CARDS

10 MEG GOLD CARD $519.
20 MEG GOLD CARD $595.
20 MEG 1/2 LENGTH CARD $645.

MACINTOSH DRIVES... D.S. External Drive
1 yr. warranty INTRODUCTORY PRICE $199.

APPLE DRIVES the Finest Made!!!
$119. IIe $129. IIc

XT-CLONE MOTHER BOARD

Fully Socketed — STANDARD $119. — 8 Megahertz Turbo $169.

HARD DRIVE CONTROLLERS (with cables)
WD $125. ROSE $99. ADAPTEK $199.

Dealer & OEM Discounts Available

Call for Prices on Other Boards & Complete Systems

PA Res. Include 6% Tax

M.C. & VISA Accepted

OWL-Services
P.O. Box 116
Mertztown, PA
19539
TECH SUPPORT
PA (215) 682-6855

TOLL FREE ORDER LINE (800) 245-6228

GIVE COMPUTER SHOPPER for the Holidays

See details on page 54.

EMCO

FREE PEN WATCH FOR ORDERS OVER $50.00

(805) 499-6871

FACTORY GUARANTEED QUALITY

DETACHED KEYBOARD $95.00

- Apple-Franklin compatible
- Programmer keyboard
- Enhance over 40% of keyboard functions
- Microprocessor control with Upper/Lower case
- 42 function keys
- 3 user-programmable keys
- Standard numeric key pad
- Power "ON" light
- Curly-cord connector and connector mate included

S & H $5.00

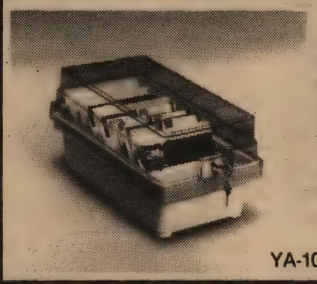
5¼" DISKETTES $0.75

DS/DD G-Neric diskettes
w/hub rings, sleeves & write protect tab (pkg. of 20) **$15**

FREE DISK DOUBLER
with purchase of 100 pcs Diskettes

S & H $3.00
(Note: $3.00 Shipping & Handling required on all diskette orders)

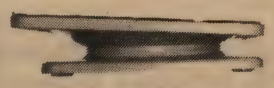
FLIP 'N' SORT $12.95



- Anti-static
- Elegant appearance
- Key lock for file integrity
- Smoke top w/beige base
- Protect up to 100 5¼" diskettes
- Nine movable dividers
- Non-slip guides keep disks upright and flat

YA-100 S & H $4.50

ADJUSTABLE MONITOR STAND $12.95



- Tilts and swivels display
- Rotates 360°
- Tilt-angle adjustable and lockable
- Rubber pads on top and bottom guarantee no slipping
- Holds all size monitors

S & H $4.50

JOY STICKS $17.95

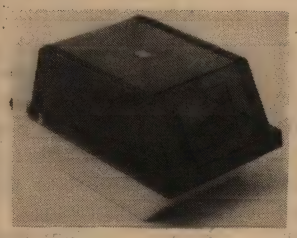
HAND HELD

DESK TOP

- Apple II+, IIe, IIc, or IBM pc compatible
- Self-centering w/metal handle
- Adjustable verticle and horizontal
- Hand-held model with AutoFire
- Please specify II+, IIe, IIc or IBM pc on order

S & H $4.00

FLIP 'N' CARRY $11.95



- Anti-static
- Built-in carrying handle
- Elegant appearance
- Smoke top w/white base
- Protect up to 50 5¼" diskettes
- Five movable dividers
- Non-slip guides keep disks upright and flat

YA-50 S & H $4.50

IBM EXTERNAL SYSTEM $150

EXET-1 S & H $10.00

- Beige color
- Power command center, one master switch and four subswitches with four sockets
- Built in power supply, 65W. +12V/2.5A; +5V/6A; −12V/0.5A
- Two half height drive slot
- Built-in cooling fan
- Built-in surge protection/EMI filter

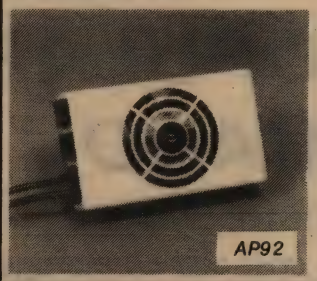
15" × 19½" × 3½"

DISK DOUBLER $6.95

- Accurate position guide
- Hand-held compact design
- Square notch-cut
- Sturdy, all-metal construction

S & H $4.00

COOLING FAN $29.95



- New super-thin design
- Adjustable: fits all cases
- Dual outlets for monitor and printer
- Heavy duty switch w/power on pilot light
- Built-in power surge protection
- Also fits Commodore model 1541 drive

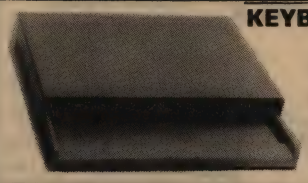
S & H $4.00

RF MODULATOR SET S & H $4.00 $9.95

- RF Modulator
- TV Interface
- Coaxial Cable

KEYBOARD DRAWER

S & H $10.00 **$49.95**



- Slides out on ball-bearing glides and locks.
- Steel platform with baked-on beige enamel finish to match your PC
- Space-saving size: 3⅝"h x 22"w x 15½"d

EXTERNAL PORT

ONE PORT **$4.95**
FOUR PORT **$12.95**

- Apple II+ I/O extender
- Easy access to I/O
- One-port or four-port available
- Control by individual switch

S & H $4.00

VIDEO 'FLIPPER' $9.95

- Easily flips from 40 to 80 column mode and back
- One computer to two monitors connection and select
- Two computers to one monitor connection and select

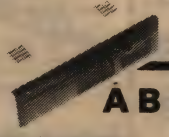
S & H $4.50

ANTI-GLARE PANEL

- **M12 - Fit 12" monochrome monitor** **$14.95**
- **C12 - Fit 12" color monitor** **$17.95**
- **M14 - Fit 14" monochrome monitor** **$17.95**
- **C14 - Fit 14" color monitor** **$19.95**

S & H $4.00

FLOPPY DISK DRIVE $125.00

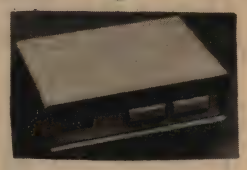


HALF HEIGHT

- Apple compatible
- 5¼" Half-height
- 150(W) × 50(H) × 220(D)mm

S & H $6.00

A B SWITCH $49.95



- Two position push button Centronics-style switch
- Parallel transmission
- Beige color to match your PC
- Perfect for connecting two printers to one computer or connect two computers to one printer with parallel interface
- Size: 1⅞"h x 7⅛"w x 5"d

S&H $5.00

APPLE COMPATIBLE

16K RAM Card - II & II/+ upgrade to 64K **$35**
Z-80 CP/M Card - II, II/+ & II/E **$35**
80 Column Card - soft switch with inverse video chip for II/+ **$60**
Extended 80 column with 64K RAM - II/E **$35**
Printer Card with cable - centronics parallel, II/+, II/E **$35**
1 M Ram Card - II/+ & II/E **$300**
Power supply - heavy duty, straight connector, II/+, II/E **$60**
Case & keyboard with numeric key pad - II/+ ... **$75**

S & H $10.00

MONITOR
Hi-RES, 12" AMBER, composite input **$100**
HI-RES, 12" AMBER, TTL input built-in swivel . **$125**

S & H $12.00

IBM COMPATIBLE

Monochrome graphics/parallel printer port ... **$119**
Color/graphics interface card **$95**
Floppy disk drive card - 4 drives **$50**
Multi I/O plus card -
2 ASYN communication port **$99**
1 Parallel printer port, 1 joystick port,
1 Clock/Calendar with battery back up.

S & H $4.00

Power supply - 150W, EMI filter & circuit protection **$125**
Keyboard - 5150 ..... **$75**

S & H $8.00

• WANTED • DEALERS • DISTRIBUTORS •

EMCO (805) 499-6871

3541 OLD CONEJO ROAD, SUITE 111
NEWBURY PARK, CA 91320

PRICES AND AVAILABILITY SUBJECT TO CHANGE WITHOUT NOTICE

VISA MASTERCARD ACCEPTED

Please add on 4% for VISA or MasterCard orders.

TERMS:
- Cashier's check or money order only
- **FREE S & H charges for prepaid orders**
- C.O.D. orders please add on S & H charges
- California residents please add 6% sales tax
- 10% restocking charge for orders returned or refused
- Extra S & H charges for outside domestic U.S.A.

GUARANTEE: 90 days DELIVERY: UPS, stock to 4 weeks

Flash
continued from page 153

serve. This is nice to have on occasion. Flash's implementation of Vidtex has high-resolution and medium resolution graphics, but no semi-graphics. Also all Vidtex pictures are displayed in black and white only. Flash will save RLE pictures in DEGAS format if you press the insert key. On a color system all pictures will be saved in low resolution (DEGAS extender PI1), on monochrome systems they will be saved in high resolution (PI3).

Except for using the word processing and one or two other special features you never have to leave the terminal screen. All necessary commands and any parameter changes can be entered via Flash's command line interpreter. Simply hit Insert and the status line changes to a command line, where you type in any command you want executed. For example if you wanted to download a file using Xmodem, you would press insert, then enter DL XM B:Uownld.fil.

In addition to the command line you can enter many of the most frequently used commands by holding down the Alternate key and hitting a single mnemonic key. To download a file using Xmodem just hit Alt-R and Flash will prompt you for a path and file name. A quick on-line reminder of all the commands is displayed by hitting the help key.

Terminal modes are of course only half of a telecommunication program. Telecommunication programs must also implement some means of file transfer. Flash has, allows for three types of file transfer. Straight ASCII with no protocol, DC2/DC4 ASCII protocol, and the Christensen Xmodem protocol. For all but a very few cases file transfer is best accomplished using the Xmodem protocol.

Flash's implementation of Xmodem has many options, including the choice of Cyclical Redundancy Check (CRC), or Checksum (CHK) modes. You also have a choice of 128 kbyte sectors or 1 kbyte sectors. The most important option in the Xmodem parameters is the choice of "tight" or "loose" timing. The Xmodem protocol has some very tight timing constraints on how long it should take to send sectors and the time between sectors. These timing constraints don't work well with large multi-users systems such as Compuserve, which can take far longer than the alloted time to respond when they are under a heavy load. (Saturdays and Sundays are particularly bad on Compuserve).

To get around this Flash allows you to set the timing constraints to "loose" which gives the host system more time to respond. I have used Flash to download from Compuserve on several occasions when they were extremely busy and haven't experienced any trouble.

Flash provides much more than a couple of terminal modes and file transfer protocols. It can set up to be a very automated system. Tasks to be automated can be stored in two ways, either as strings accessed with the function keys or as Do files.

The function keys can each be predefined with any string up to 80 characters in length. Flash recognizes two banks of function keys both shifted and non-shifted providing you with 20 "Macros."

The function definitions can be saved as disk files, and key definition files can be read in at any time, allowing or customizing the function key for each of the systems you regularly access.

Do files are disk files of commands strings. They can be of any length, and can send any string to the remote system or execute any of the Flash commands including the execution of another Do file (you can only have three Do files open at any one time).

The use of Do files really simplifies the use of Flash. In most instances you will set up a Do file to execute from the dial directory. To do this append an "@" followed by the Do file name to the name of the system in your dial directory. The Do file will automatically execute when the system gets a connection. This is easily set to enter your password, account number, etc.

Much more complex Do files can be set up. Depending on how much effort you want to put into writing the script commands, there are very few things that flash can do that can not be set up as a Do file. The power of the Do files is the second best feature of the program.

The best feature of Flash in my opinion is that Antic and the program authors both seem committed to supporting the program. Antic is distributing this without any copy protection and has an excellent upgrade policy. If there are any future versions of the program Antic promises to upgrade you to the newest version for only $5.00.

The authors have provided a lot of additional support to Flash users on the Compuserve Atari ST Sig. Alan Page has put several additional doc files up in the download area expanding on the manual and answering the most asked questions about the program. He has also provided a translation file that allows Flash to work with ATASCII (Atari 8-bit machines) systems.

He has also gone into a lot of detail on some advanced Do file techniques. In the doc file for the Flash patch programs he explains how to set up the program to call through a list of numbers trying each number in turn until you get a connect. It's obvious that Mr. Page wants people to get the most use of the program as possible.

Flash is a good program with a lot of nice features. If you are willing to spend a couple of hours to learn how to use this, I think you will consider the time well invested. ●

BY POPULAR DEMAND!

Winchester Drives

Perfect for low cost add-on storage.

* Seagate ST506 *(Industry Standard)*
5 Megabyte

** 3 month PBDS Warranty

Limited Quantities $99.00 ea

— Call for volume discounts —

PBDS Warranty & Non-warranty Repair Service

ALSO

New Qume Printers
with 3 month warranty

Sprint 9/45 $595.00 ea.
Sprint 9/55 $695.00 ea.
Letterpro 20 $345.00 ea.

Sheet feeders also available

— Call for volume discounts —

pbds

PACIFIC BUSINESS DATA SYSTEMS INC.

6938 Sierra Ct. • P.O. Box 2112
Dublin, CA 94568
Telex 289-721 PBDS

Contact: Steve Cameron
(415) 828-9410

* Trademark of Seagate
** Drives refurbished to assure quality

UPS SYSTEMS HEADQUARTERS **KNAPCO** RELIABLE COMPUTER BACK UP POWER.

A-B SWITCH
ALL 25 PINS CONNECTED
4" X 3" X 1" ALL FEMALE RS 232
PUSH SWITCH
FROM ONE COMPUTER TO 2 PRINTERS $39.50
A-B PARALLEL $59.50
A-B-C-D $49.50
A-B-C-D PARALLEL $69.50

CORCOM RFI FILTERS
DUAL"R" EMI RFI FILTER
CORNELL-DUBILIER
#10R6 $5.95
APFM MEDICAL SERIES APFM300CEE 3A $1.99

RS 232 SPIKE PROTECTORS $9.95
MODEM SPIKE PROTECTOR
TSB $59.95 NOW $38.95

STAND BY POWER SUPPLIES
TRIPP LITE
SB200
SB400
SB1000
• 200 WATT • REG $249. OUR PRICE $199.
• 400 WATT • REG $359 NOW $269.
• 1000 WATT • REG $899 NOW $499.
NO BATTERY SUPPLIED

COMPLETE UPS SYSTEMS
BLACKOUT AND BROWNOUT PROTECTION WITH BUILT-IN SPIKE AND NOISE PROTECTION
BC-200 • PRICE $259.00
BC-425-FC • $395.00
BC 675-FC (NEW) • REG. $829.00 $585.00
BC-1000-FC • REG. $1179.00 NOW $875.00

LINE CONDITIONER PREVENTS BROWN OUTS
LS-600 (5A. ~~$119.00~~ $89.00 LOW VOLT. ONLY
LC-1200 (10A. ~~$219.00~~ $159. LOW-HIGH VOLT
LC-1800 (15A. ~~$299.00~~ $219. EMI-RFI + SURGE
LIMITED WARRANTY

SEND FOR FREE CATALOG
$1.00 FOR POSTAGE
or call us at
(813) 392-0406

NEW KNAPCO UPS SYSTEMS

LOWEST PRICES ON UPS SYSTEMS IN USA

UPSC 200 200 WATT $299.
RETAIL $499.
UPSC 350 350 WATT $349.
RETAIL $799.
****UPSC 550 550 WATT $399.**
RETAIL $899.
UPSC 800 800 WATT $599.
RETAIL $999.
***UPSC 1000 WATT $699.**
RETAIL $1250.

MODIFIED SINE-WAVE
2 MS. SWITCHOVER TIME
W/INTERNAL GELL CELLS
1 FULL YEAR WARRANTY
4 OUTLETS, BROWN OUT, BLACK OUT, RFI AND SPIKE PROTECTION
** 220V. AC 50 HZ. to 115V. AC-60 HZ. $499.
* NEW MODELS WITH SINE WAVE OUTPUT

BLOCK FANS
3" ETRI OR TORIN $5.95 $5.25 (25) $4.00 (100)
3" PULLS $3.95 $2.95 (100)
4½" 110V. NEW $5.95 PULLS $3.95

add 10% for shipping and handling min. shipping charge $2.50

DUAL FLOPPY DRIVE POWER SUPPLIES
POWER-ONE CP-401
+5V. @ 3A.
– .5A. @ .5A
± 12V. @ 1.5A.
10 @ $150.
SPECIAL $19.95

ELECTRA-POWER SENTRY
ELIMINATES RFI AND SPIKES
• LEVITON 3 OUTLETS,
• OVERLOAD PROTECTED W/INDICATOR $11.88
6 @ $9.95
12 @ $8.45 24 @ $7.95

S1 POWER SUPPLY
4" X 3" X 16"
11 LBS.
+48v., +12v., –12v., +5v. ALL AT 3.5A.
$29.95 4/$99.95

MOTOROLA PALLET LOAD 6 $325.00
CRT DISPLAY MONITORS
• 13" green anti glare • 18.75 KHz screen
• High contrast filter • Separate sync
DS4003 P-39 $49.95
PARADYNE PDS MONITOR WITH FULL CABINET $69.95 2/$129.95

MONITOR POWER SUPPLIES
6 @ $11.50 12 @ $10.50

ISOBAR LINE FILTERS
IB 2-0 WALL MOUNT
1 FILTER NET $48.00
SPECIAL $32.00
#IB 4-6 6' CORD
2 FILTERS $53.00

New Spike Bars RFI And Spikes
SK6-6
REG. $49.95
$29.95
6 OUTLET BAR
W/6 FT. CORD
6/$27.50 EA. 12/$26.50 EA.

H.J. Knapp of Florida, Inc.
4750 96th St. N. St. Petersburg, Florida 33708
VISA

Maps & Legends continued from page 152

Cartographer, Version 2.0. Price $34.95. Antic Publishing, Inc., 524 Second Street, San Francisco, CA 94107, 415-957-0886.

H&D Base

H&D Base is a data base written by Chester Holmes and Oliver Duckworth, from Mirage Concepts. H&D Base was one of the first full-featured data bases available for the ST. It was written in 4xForth and uses a tidy 200K of memory.

H&D Base can not only act as a data manager, it can manipulate the data within the data base. H&D Base supports command procedures that the user builds to manipulate the data in a data file. The data base limits are: maximum of 97 fields per record, maximum of 2000 characters per record, maximum of 254 characters per field. Hardly a limitation to most applications.

Like most data bases, it is user friendly but beginner hostile. That is good, because you aren't a beginner very long. You won't just sit down and look at some menus and start. Since Holmes and Duckworth want you to make that "beginner" to "user" transition rapidly, they have a comprehensive tutorial that goes with the program.

The tutorial/manual is so easy to use and clearly written that within fifteen minutes you will be able to make meaningful entries into a database. The manual starts you off with instructions on how to boot the system and load the program. They take nothing for granted: it is perfect for beginners—not just database beginners, but people with no computer or ST background.

First your type in their five sample entries and all subsequent work will build on what you have done earlier. The information is clear and easy. most beginners can breeze through the beginning command tutorial at their leisure. Afte the tutorial, the documentation has a handy reference guide of all commands and syntax.

One problem with H&D Base is that the commands, though simple and unburdened by GEM, are not mnemonically tagged to help you remember them. Some "Append" functions, for example, are:

Ctrl Y: delete to end of field
Ctrl W: exit, saving changes
Ctrl Q: exit, no save

Not only is there no easy way to remember the commands, notice that Q and W are adjacent keys. Accidentally striking the wrong key will probably never happen to you, but why did they risk it?

Another problem with H&D Base is the difficulty of getting all this well-organized, sorted and classified information down on paper. As with spreadsheet programs, paper just isn't wide enough to hold everything you would like. Of course, you can set your printer for 132 columns (a saving grace) but that is not mentioned in the H&D Base documentation.

I generally think of data bases as business tools but most people who buy them are hobbyists. Many people who want to catalogue their book or record collections probably don't need all the features H&D Base offer, but at such a reasonable price, there's no reason to buy a lesser data base. (To impress your friends, don't just enter names and dates. Key off some interesting, esoteric information. Be able to give the names and dates of every band that has recorded Jumpin' Jack Flash in the last fifteen years.)

The functionality of this database is astounding. If you are thinking to yourself "I wonder if it will..." the answer is yes. It is a powerhouse of computing running on a powerhouse computer. It is fast, cleanly implemented, well-documented, it isn't copy protected, and it isn't overpriced.

H&D Base, Price: $94.95. Mirage Concepts, Inc., 4055 W. Shaw #108, Fresno, CA 93711, 209-227-8369. ●

COMPUTER SMYTH

THE HARDWARE JOURNAL

Now there's a brand new magazine for the technically sophisticated microcomputer enthusiast who likes to build, customize and explore micro hardware at the chip and board level.

The publishers have recruited an outstanding staff of senior editors with more than twenty years of engineering, software and diagnostic experience in the microcomputer field. ***Computer Smyth*** is produced quarterly in Peterborough, New Hampshire, home of ten other microcomputing publications and a total of more than twenty internationally circulated publications.

Computer Smyth's primary interest is hands-on construction, modification and expansion of micros. We see the IBM PC phenomenon as a giant magnet or vacuum, dragging hardware and software talent into a vortex of activity that ignores and overshadows the line of new CPUs and peripheral hardware enhancements that are becoming available. We believe 32-bit architecture is the proper and exciting growth direction for micros and too little talent is being invested in that opportunity.

Computer Smyth's editors are also determined to cover all opportunities including the rich offerings of the IBM lines as they appear and especially to evaluate the so-called clones.

We believe magazines are hard-copy networks—or extensions of the central nervous systems of those who read them and interact with each other through them. The inter-stimulus factor accelerates each participant's learning curve, produces new combinations of ideas and new answers, and defines fresh problems. We are content and idea centered—not just a sales medium for consumer goods.

Who reads *Computer Smyth?* We're looking for the intelligent, technically curious and adventurous computer buff who isn't afraid to take the back off the case, who likes new experiences and digs into any device, unsatisfied until all its mystery is dispelled and its potential is fully in hand. Our reader is a craftsman who enjoys building, even while finding the adventure just a little scary.

Our first-year line-up included: The SC84 computer; a brand new Z80 system with exceptionally powerful peripheral possibilities and a plain English description of each and every capability of the machine and its operating system; an X/Y charter/plotter you can build for under $60 that will teach you a lot about how these devices work; a neat, powered wire-wrap tool for two hours of your time and a little more than the price of the tool's bit; an RGB color to composite converter board; Ed Scott's three part series on his 68000 computer; Ken Barbier on printer interfaces; a multipen plotter upgrade; a Data Destroyer (for super clean disks) a review of the DTC XT clone; an RMN converter; and an audio module for the Atari 8000.

Coming up in 1986: a switched power supply; an EPROM programmer; a safe, active circuit tracing tool; a silicon disk; how to identify and find microchips; how to buy a superplus keyboard; and builder reports on four single-board computers: Z80, 64B180, PC and XT.

Our Guarantee: Your money back after your first issue for any reason.

To subscribe, just fill out the order blank and enclose your check for $15 for one year or $25 for a special two-year introductory offer. If you prefer, use your MasterCard or Visa card. Credit card users are welcome to place phone orders with Carol Symonowicz, Monday–Friday, 9 a.m. to 4 p.m. at (603) 924-9464.

ORDER BLANK

☐ Enter my subscription for one year at $15.
☐ Make that two years at $25.
☐ I enclose $ _____ by
☐ check money order ☐
☐ Master Card Visa ☐

NAME
STREET & NO.
CITY STATE ZIP
CARD NO. EXPIRES

COMPUTER SMYTH *PO BOX 176 Dept. SH-16 Peterborough, NH 03458*

Deluxe Video continued from page 145

mally, use a Rapid Scan, Skip to End, Freeze the Frame, use Frame by Frame advance and set up a Loop so that the video replays continously. In addition, a digital clock at the bottom of the remote control counts off seconds and jiffies to give you a better handle on the timing of your video. With the exception of Loop, all the controls mentioned also operate in reverse, giving you the workings of the finest of video recorders.

With all the usage of the word "video," you'd expect the subject of VCRs to occur someplace, right? Strangely enough, in the documentation there is no depth to the discussion until the appendix section is reached and then it is divided into two categories: home and professional VCRs.

For a home VCR, expect some degradation of the signal: it is nothing to worry about but is a by-product of using the composite output of your computer to put a signal into the composite input of your recorder. Remember that you built and previewed your video using (presumably) an RGB monitor and that an RGB display is much sharper than what can be delivered by composite means. In addition, if you are using for playback a standard TV (as opposed to a monitor) the conversion to an RF signal will cost a bit more in sharpness.

This shouldn't scare you away, however. The resolution in Deluxe Video is such that there is plenty left even after an RF conversion has taken place.

The values of actually transferring to videotape are these: You can create much longer videos than could be contained on single runtime disk; and you can provide copies of your work to a wider audience for there are more VCRs in the homes than there are Amiga computers. (However, we expect that to change.)

In doing your recording, opt for the fastest speed your recorder will allow: On a VHS recorder, this is the SP mode; on a Beta it is Beta I or Beta II (depending on the age of your machine). Recording at the faster speed gives you the highest quality of which your VCR is capable and besides, if you do choose to record at a slower speed, remember that only your mother is going to sit through six hours of your nonsense.

For professional VCRs, such as those found in TV studios or at the studios of independent video producers, the quality of a recording can be kicked upward by playing the video at ½ or ¼ speed and with the VCR recording at slow speed. This depends upon the VCR then being able to playback at normal speed and it is for this reason that you needn't try it on your home VCR, for it won't work. Home VCRs play back only at the speed at which a program was recorded and there's nothing you can do about it.

Deluxe Video will also work with GenLock and Frame Grabber. In case you are not familiar with those names, GenLock is a device that allows your Amiga to combine two video sources into one picture by superimposing them and synchronizing the signals. With this, it would be possible to create a background with Deluxe Paint and, using a video camera, superimpose a picture of your family. The output from this process cannot be saved to disk, but can be saved to a video recorder.

Frame Grabber, on the other hand, accepts signals from another video source and digitizes them as still pictures so they can be saved to disk and later used as a part in one of your videos.

Once again, we'll mention that Deluxe Video, in the telling, probably seems awfully complicated. This is because of terms that are new to most computer users and is also due to the fact that there are so many options, so many things that can be done within the program to create your own unique video statements.

And once you run out of ideas for recombining the elements on the Parts disk, start creating your own Pictures and Objects with Deluxe Paint and save them to the parts disk in the proper drawers.

(For Objects created with Deluxe Paint, the default black background will be transparent during its use in Deluxe Video. You'll also note that your work of art has been vertically compressed by Video, but using the "sizing" option will restore it to the proper proportions.)

In my own use of it—and I'm far from having used every possibility—I found the learning time to be about three hours, some of which was spent on rerunning the videos from the Player disk. And in writing of this learning curve, I should mention that previous video experience had nothing to do with helping me to master the mechanics of the program.

In short, it is a complex program, but the documentation is good; the step-by-step tutorial allows you to create your first video in minutes (while introducing you to most of the "shop talk"); the scripts of the demonstration videos can be analyzed—and all of these educational features within the program make it easy to understand and use in a very short time.

And the value of Deluxe Video, whether used in business, a profession connected with the video or computer arts, or as a new plaything, is incalculable. I first got into computers because of an interest in animated graphics. Now all the programming work has been removed from the process, allowing me to concentrate on the creative side of the endeavor by using what is essentially a cut-and-paste operation.

Had Deluxe Video and the Amiga existed when I was active in video, creating that title sequence with the firecracker, I would not only have dazzled clients—I'd have been able to charge them double.

From now on, you can certainly bet that they will be using it. And while the production values from independent video studios is making a giant leap, you can make sure your own home-grown variety of video is doing the same.

Deluxe Video is available from Electronic Arts at 1820 Gateway Drive, San Mateo, CA 94404 and at a suggested list price of $99.95. ●

DISKETTES DS/DD

5% DISCOUNT ON YOUR FIRST ORDER

29¢

MINIMUM ORDER 100

- 10 Mil Jacket
- 65% Clip Rate
- Same Day Shipping
- 100% Certified
- Includes Labels and Tyvek Sleeves
- Manufactured in the U.S.
- Lifetime Warranty
- Write Protects
- Reinforced Hubs

We guarantee same-day shipping or you receive a 5% discount on the total order.

Call today for pricing on 3.5 bulk diskettes and other computer related products, all at comparable savings.

MasterCard VISA

PROFESSIONAL MEDIA SALES, INC.

1-800-222-9964 (In California Call 408-496-1205)

PAYMENT: C.O.D., MC OR VISA

international orders.

FREE UPS Shipping on prepaid orders! Totaling over $100.00

COMPUTERS WHOLESALE OF N.Y. INC.

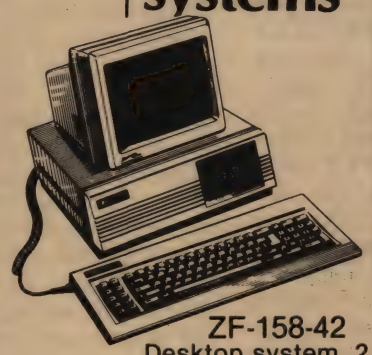
1090 Brewerton Road Central Square, New York 13036

ORDERS ONLY
1-800-327-0095
INFORMATION call 315-676-3004

• No sales tax on orders outside N.Y. State. Purchase orders welcomed from qualified institutions (please call for price verification) and please add 2% for handling and insurance • Payment Mastercard, Visa, COD, money order or check.

Availability, prices & policies subject to change without notice. Not responsible for typos.

ZENITH data systems



ZF-158-42
Desktop system. 2 5¼" floppy disks. Serial port, one parallel port. SFTW. Incl'd.

$1379.00

SPERRY PC/IT

Fully IBM PC/AT Compatible with an 80286 processor, 6, 7, or 8 MHZ clock 512 K RAM. clock, 2 RS-232 serial, one parallel, 1.2 MB floppy disk

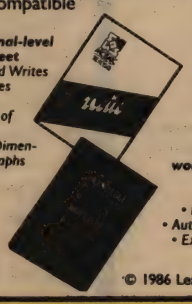
$1899.00

The Leading Edge® Model "L" Series™ 1200B

MODEM ONLY $149.00

One Plus $1 Equals Two.
IBM®-Compatible

$59
+ $1
= both packages



Professional-level Spreadsheet
- *Reads and Writes 1-2-3® files directly*
- *15 Types of Graphs*
- *2 and 3 Dimensional Graphs*

Full-featured word processing
- *Split Screen*
- *On-line Help*
- *File Conversion*
- *Automatic Backup*
- *Extensive Printer Support*

Leading Edge and logo are registered trademarks of Leading Edge Products, Inc. Twin is a registered trademark of Mosaic Software Inc. Lotus 1-2-3 is a registered trademark of Lotus Development Corp. IBM is a registered trademark of International Business Machine Corp.

Call for other Leading Edge products

© 1986 Leading Edge Products, Inc.

LEADING EDGE AUTHORIZED RETAIL DEALER

PRINTERS

Anadex	Call
Qume	Call
C. ITOH	Call
Texas Instruments	Call
Diablo	Call
Toshiba	Call
Juki	Call
Panasonic ★ ★ ★ ★	
New 1080-120CPS	199.00
New 1592	Call
EPSON	
LX-80	229.00
FX-85	329.00
FX 286	549.00
NEC	
Pinwriter P2T	439.00
Pinwriter P3T	715.00
STAR MICRONICS	
NL 10	249.00
NX 10	Call
LV 1210	225.00
LV 1215	Call
SR 15	539.00
NEW NX&NL Models	Call

MONITORS

AMDEK	
Video 310A Amber	149.00
600 RGB	429.00
700 RGB	449.00
710 RGB	539.00
NEC	Call
Panasonic	Call
Sakata	Call
PRINCETON	
MAX-12, 12" Amber TTL	179.00
HX-12, 12" RGB	439.00
SR-12, 12" RGB	599.00
TAXAN	
TAX 640	499.00
TAX 122	139.00
ZENITH	
New ZVM-1220	79.00
New ZVM-1240	149.00

SOFTWARE

CABLES • DISKETTES
RIBBONS

XT TURBO

ONE YEAR GUARANTEE!

$899.00

640K 8.0 MHZ

FULLY IBM COMPATIBLE

INCLUDES: 2½ ht SEAGATE 360K Drive • KEYTRONICS Keyboard • Dual speed/separate switch • 8087 Socket • 8088 Processor • 8 expansion slots
135 Watt power supply
MULTI IO CARD with 2 serial ports • 1 parallel port • 2 game ports • clock calendar
Color card with 1 parallel port
licensed MS/DOS + Basic

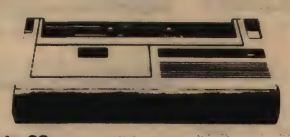
NEW COMMODORE PC COMPATIBLE MS/DOS UNDER 999.00 CALL FOR PRICING

MODEMS

Anchor Automation	Call
Hayes Smart Modem 1200 (Hardware only)	349.00
Racal Vadic	Call
Softeam 212A	179.00
U.S. Robotics Courier 2400	489.00

OKIDATA®

an OKI AMERICA company



Okimate 20

The Full Color Personal Printer with Near Letter Quality Word Processing
Includes advanced Color Screen Print software to make color printing easy. Recommended as a high-versatility first printer or a second printer for color.

149.00

Microline 182

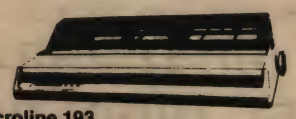
Utility Printing and Near Letter Quality Together in a High-Performance, Low-Cost
Featuring the versatility of high-speed spreadsheets and high-resolution printing in an affordable printer for growing businesses

239.00

PACEMARK 2410

This Printer Has it All! When speed and near letter quality are crucial.
• Three different Print Modes including 350CPS utility and 85CPS near letter quality.
• Two Color Printing • High Speed Dot Matrix • Wide Carriage

1650.00



Microline 193

High Performance And Versatility In An Affordable Wide-Column Printer.
High-speed utility printing teams with exceptional near letter quality and throughout to form the heart of the Microline 193 Personal Printer.

509.00

Applying The Atari
continued from page 80

that products such as these, designed specifically for the Atari, turn out to be much more affordable than comparable products for the Apple. I have discussed some of these products in previous columns and you'll find more information on them in Atari-specific publications.

Dear Jeff:

I have an Atari 800 and I would like to put more memory in it. I have written to Atari but all they do is give me the runaround. I already have 48K and the best they can do for me is that I send my 800 to them with $50 and get an Atari 800XL.

Most of the upgrading I see in the Atari magazines are for the XL. I don't like the appearance of the XL. Is it possible for me to upgrade my 800 to an 800XL? I have spent almost $2000 on my computer so it is hard for me to just give it up.

H. Galang
Honolulu, Hawaii

There are a couple of memory boards available to expand your Atari 800. One product I've recently mentioned is the Ramcharger from Magna Systems (147-05) Sandford Ave., Suite 4E, Flushing, NY 11355), an Axlon-compatible board that is easily installed. Axlon-compatibility is essential when buying a memory expansion product for the 800, since most of the programs available for the expanded 800, such as Synapse's Synfile+ and Syncalc, were designed to support the Axlon board. The Ramcharger is sold in 256K, 512K, and one megabyte versions for $150, $200, and $300, respectively.

If you're interested in building your own memory board, David G. Byrd (1513 Comanche Dr., Las Vegas, NV 89109) has written an excellent public domain article, "The Atari 800-Plus 256K," which gives the Atari 800 288K total memory.

An upgraded 800 will not be 800XL compatible, since the 800XL contains a different operating system and utilizes for memory management what would be joystick ports 3 and 4 on the 800, among other differences. However, software manufacturers are always interested in reaching the largest market possible, and you'll find that the vast majority of Atari software, including newer programs, will run on the Atari 800.

Dear Jeff:

This is not a criticism but a suggestion for improving a fine program—your BugetMate. It would be most helpful to the user if a running total of the BUDGET and ACTUAL columns were shown in addition to the monthly totals. This would show a person how he is averaging out for the year rather than getting all excited because he went over budget $100 in one month. If it is not possible to include this in the main program, perhaps it could be incorporated in the Summary Printout. Please do offer more special versions of "Applying The Atari" programs in the future.

Charles Eckhardt
Versailles, Missouri

The best way to keep a running total of the ACTUAL and BUDGET columns for the year is to add a CARRYOVER category to your BudgetMate data. Each month, simply place the total of each column (negative or positive) in that column's CARRYOVER line so that the balance for the BUDGET and ACTUAL columns for the current month is zero. Next month, copy the CARRYOVER value from last month into the current month's columns. (You can toggle in last month's BUDGET data by pressing CONTROL-T. Press CONTROL-T a second time to bring back the current budget unless you want to keep last month's budget.) At the end of this new month, add the values (using CONTROL-A) at the bottom of the columns to the CARRYOVER category, so that the balance is again zero in each column. By doing this month to month, the CARRYOVER category will show you the running total of the BUDGET and ACTUAL columns for as many months or years as you want to continue. At the end of the year, you can clear the carryover if you want and start again.

If you don't want to give up a whole category for the carryover, you can include it in MISCELLANEOUS or as part of another category. Or, if you're only interested in a running ACTUAL total, you can include the carryover as a transaction detail on any of the twenty categories.

And while on the topic of the June 1986 BudgetMate program, another popular question:

Dear Jeff:

I would like to express my satisfaction with the expanded version of your BudgetMate program. I have been using it for the last month and everything has been working great. There is one thing I would like to inquire on. Is there any way to program the keypad so that it would operate out of joystick port #2. I find myself having to unplug a joystick and having to plug in the keypad each time I use the program. And with my budget, this is about every other day.

Al Crespo
Bakersfield, California

For owners of the enhanced BudgetMate diskette, the

continued on page 163

the **DISTRIBUTOR™**

Integrated Distribution Control System

Inventory Control
- Item file maintenance and reports.
- Full price flexibility and easy editing
- Salesman reports, price lists, physical count report, detail inventory report, inventory percentage report.
- Purchasing reports and recommendations.
- Automatic update of inventory on receipt of order.
- Back-order processing, back-order list, back-order inquiry by customer.
- End of period processing.

Order Entry/Billing
- Invoices at order entry line or in batch.
- Quantity-on-hand always kept current by automatically adjusting for previous transactions not yet posted.
- Full back-order retention and processing. Partial shipments and overide capabilities.
- Accepts credit memos.
- Returns update quantities, G.L. accounts, and receivables.
- Displays customer current/30/60/90 day balances and credit limit information on screen.

Accounts Receivable
- File maintenance and reports.
- Add/edit/post A.R. transactions and journal.
- Prints audit list, monthly statements, account report.
- Automatic update of G.L. accounts.
- On-line account inquiry.
- Automatic calculation and posting of finance charges.
- Prints aging report.
- Prints billing/shipping labels.

Sales Analysis
- Period to date and year to date by customer, product and product category.
- Period by period totals for product categories, cost of goods sold, regional totals.
- Salesman totals, discount totals.

General Ledger
- G.L. account maintenance and reports.
- Adding/editing of G.L. transactions.
- Flexible G.L. account configurations.
- Automatic posting of G.L. transactions.

Accounts Payable
- Vendor file maintenance and reports.
- On-line account inquiry.
- Cash requirements, open item, and vendor analysis report.
- Adding/editing/printing of accounts payable transactions.
- Flexible payment on accounts.

Hardware Requirements
- I.B.M. compatible system with monochrome or color, 128K RAM (1) 10Mg disk drive, (1) 360k 5¼" floppy drive printer.

The DISTRIBUTOR is tailored to meet the special needs of your distributing business, incorporating features not found in most systems costing thousands of dollars more. The DISTRIBUTOR is the result of three years of development within the distribution industry.

The DISTRIBUTOR is not sold in pieces but only as a complete system featuring: *Inventory Control, Accounts Receivable, Order Entry/Billing, General Ledger, Accounts Payable, and Sales Analysis.*

Great Southern Computers
618 Commercial Drive
Holly Hill, Florida 32017

COMPLETE SYSTEM **$99.95**

FL RESIDENTS
ADD 5% SALES TAX
VISA, MASTER CARD, AND C.O.D. ORDERS ACCEPTED

(904) 258-5010
In FL (800) 223-2051
CALL COLLECT TO ORDER

30-Day Money-Back Guarantee. Not copy protected.
$10 restocking fee if the disk envelope is opened.

Microland
10600 Bellaire, Ste 135 • Houston, TX 77072
(713) 498-2130

PRINTER

Panasonic
1080 ..... $225
1091 255
1092 359
1592 465
3151 445
3131 295

Brother
HR-15 XL 375
HR-25 529
HR-35 759
Twinriter 890
M1509 399

BOARDS
XT PRODUCTS
Turbo 640K mother board (OK) .. $130
640K XT motherboard (OK) 110
Floppy disk controller (4D) 39
Case with speaker 45
Keyboard 5150-XT 55
Power Supply 135W 65
Monographic/Printer Card 79
Color graphic cad 65
Disk I/O with floppy controller 89
Multifunction board 79

DEALERS WELCOME
Ask For Dealer Prices

IBM
All systems include 256K
PC, 2 Drs $1355
1 Dr, 10MB 1645
1 Dr, 20MB 1695
XT, 2 Drs 1780
1 Dr, 10MB 2105
1 Dr, 20MB 2205

AT&T
All systems include 640K
DOS/GWBASIC, AT&T mono monitor
2 Drs $1775
1 Dr, 10MB 2045
1 Dr, 20MB 2095
2 Drs, color 2075

SUPER XT IBM COMPATIBLE
All systems include 640K & monitor
Super XT, 2 Drs $795
1 Dr, 10MB 995
1 Dr, 20MB 1045

Terms and Conditions of Sale
- *Due to our low prices and assurance that all merchandise is new, unused, all sales are final. Factory warranties in force.*
- *Item reflect cash discount and do not include delivery charges. Cashier check or money order process immediately.*
- *Prices and availability subject to change without notice.*
- *Texas residents add 6 1/8% Sale Tax.*
- *Please call for current prices.*

COMPAQ
All systems include 640K Compaq mono monitor

PORTABLE
2 Drs $1645
1 Dr, 20MB 1995

PORTABLE II
2 Drs $2599
1 Dr, 20MB 3155

DESKPRO
2 Drs $1845
1 Dr, 20MB 2155

MONITOR
Taxan 121 green $135
122 amber 139
620 color 395
630 color 450
640 color 525

HARD DISK
20MB with controller&cable $399

DISKETTES
DS/DD (each) ..... 89¢

Applying The Atari
continued from page 162

following routine will do the trick:

```
10 REM MODIFY ENHANCED VERSION
   OF BUDGETMATE
20 REM TO READ KEYPAD IN PORT 2
30 XIO 36,#1,0,0,"D:BUDGET.CNT"
40 OPEN #1,12,0,"D:BUDGET.CNT"
50 FOR I=1 TO 3:READ X,Y,N
60 POINT #1,X,Y:PUT #1,N
70 NEXT I
80 XIO 35,#1,0,0,"D:BUDGET.CNT":END
90 DATA 107, 115,51,108,30,49,109,2,53
```

To make this change, boot up with any non-autorunning disk (not the BudgetMate disk) so you are in BASIC. Type in the above program *carefully*. Be particularly careful to type the numbers on line 90 correctly or you'll run into problems. Now replace the disk in the drive with your BudgetMate diskette and RUN this program. The program will automatically make the necessary changes to BudgetMate to make it respond to joystick port 2 instead of port 1.

Readers using the listed version of BudgetMate can change the following lines to use the program with joystick port 2:

```
630 TOT=TOT-4:IF TOT=187386 THEN
    A=USR (1536):RETURN
650 DATA 104,162,6,160,10,169,7,76,92,
    228,174,133,2,240,5,202
660 DATA134,206,240,40,174,121,2,
    228,203,208,4,165,206,208,29,165
670 DATA 207,240,4,198,207,240,21,230,
    206,134,203,230,207,173,115,2
```

Telephone Master—How It Works

Now to get an idea of how August's Atari Telephone Master works. Like the June 1985 Mailing List program, a specific number of characters are allocated for the name, address, etc. However, Telephone Master stores this data in a very different way to allow much faster data retrieval. Instead of storing the name with the rest of the data, Telephone Master creates an entirely new file consisting of the first and last names by themselves, followed by a code that points to where the rest of the data resides on the diskette. Searches are made even faster in two ways: First, all the names entered on a particular diskette are loaded into computer memory when Telephone Master is run. The bulk of the data, though, (the address, phone number, and notes) is left on the diskette. Now instead of searching through an entire diskette of data to find a particular name, the program has all of the names at its disposal in RAM, and can easily get to the rest of the data associated with a particular name, if needed, by reading the diskette from the sector and byte indicated in the code following each name. The second Atari Telephone Master makes more efficient use of time is by alphabetizing, by last name, all of the names in memory. Just as it is easier for you to search for a name when the names are in alphabetical order, it is that much easier and faster for the program. Alphabetization is accomplished through a machine language sorting routine stored in ABC$, The alphabetizing routine serves a two-fold purpose: in addition to facilitating searches, it lets the program print out a completely alphabetized phone directory.

In addition to the alphabetization routine, other small routines, machine language and BASIC subroutines alike, are used to enhance the display and to keep the program user-friendly. An inverse video routine (stored in INV$), for example, allows the program to instantly highlight important portions of the screen, particularly new messages.

Okidata 192/193 ATASCII Lister

This program is the Okidata version of the July 1986 ATASCII Lister II. The program incorporates the enhancements submitted by Phil Snider. This version will run only on the Okidata 192/193 or compatible printer. For Gemini and Epson versions, see the July 1986 column, or write me for backissue diskette information.

I'd like to express my gratitude to reader Roy Lawrenson, of Rochester, New

continued on page 172

SPECIAL
LAP COMPUTER
FULL FACTORY WARRANTY

BUILT IN 300 BAND MODEM
Terminal Emulator to Communicate with Personal or Mainframe Computers

IT'S A HANDS FREE PHONE

Comes with Rechargeable Batteries and Charger.

workSlate BY CONVERGENT TECHNOLOGIES

THE MOST PORTABLE TERMINAL

OUR BEST PRICE EVER $295.00 ORIGINALLY $1195.00

Receive information such as current stock quotes and airline flight schedules. Just by plugging Workslate into a telephone jack, you can get electronic access to another Workslate, other computers or information services such as Dow Jones News/Retrieval®. Workslate is a totally independent machine. It's powerful, portable and easy to use. Workslate is for business people who handle data daily and rely on it to make decisions. Calculate. Communicate. Manage time. Manipulate information. • **Dimensions:** 8½"x11¼"x1", 3 lbs. **Display:** LCD, 46 characters per line, 16 lines. **Keyboard:** 60 keys, Typewriter-style keyboard and calculator pad. **Power:** NiCad-rechargeable battery, AC adaptor/rechanger or 4AA alkaline batteries. **Software:** Built-in handles worksheets for Financial analysis, phone, calendar and communications management. Internal Memory up to 12 8½" x 11" pages Microcassettes store up to 10 worksheets or 45 minutes of audio information.

INCLUDES FREE SOFTWARE WORTH $88.00
Information and Consultant Services Software.

OTHER SOFTWARE PACKAGES • 10% DISCOUNT ON ANY 3

Cash Management	$19.95	Insurance Analyzer	$19.95
Financial Statements	(2) $29.95	Real Estate	(2) $29.95
Inventory Analysis	$19.95	Electronic Mail	$39.95
Marketing Management	$19.95	Information Services	$49.95
Sales Reporter	$19.95	Loan Analysis	$19.95
Travel	$19.95	Portfolio Analysis	(2) $29.95

• **Comes with "Teach Me" Tapes and TOLL FREE ASSISTANCE NUMBER**

CEC
1745 Adrian Road, No. 1
Burlingame, CA 94010
415/342-4058
800/228-3411

ALTEX ELECTRONICS, INC.

your Electronics Supply House

1-800-531-5369*

IN TEXAS— San Antonio: (1)(512) 828-0503
Austin: (1)(512) 832-9131
FAX— (1)(512) 340-2409

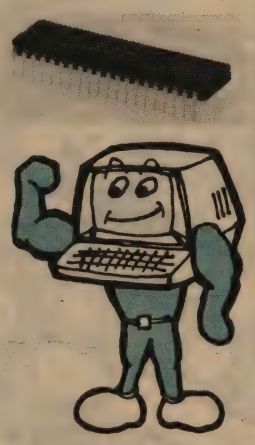
10731 Gulfdale, San Antonio, TX 78216 10705 Metric, Austin, TX 78758

Store Hours — 8:00 - 6:00 M-F, 10:00 - 2:00 SAT.

* Orders Only — for tech. info. call (1)(512) 828-0503

The Source

SPEED UP YOUR PC BY 33%



REPLACE YOUR 8088 WITH A V-20.

★ V-20 5 MEG. 15.00 ★
★ V-20 8 MEG. 24.00 ★

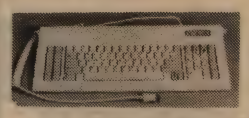
REPLACE YOUR 8086 WITH A V-30.

★ V-30 5 MEG. 28.00 ★
★ V-30 8 MEG. 34.00 ★

4164-41256- CALL

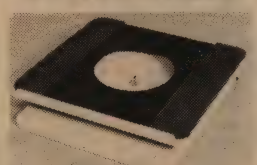
BOTH 150 NS!

COMPUTER KEYBOARDS



- 5150 STYLE KEYBOARD PC/XT COMPATABLE **$54.95**
- 5151 STYLE KEYBOARD PC/XT COMPATABLE **$89.95**
- 5151 STYLE KEYBOARD XT COMPATABLE (XT/AT STYLE) **$99.95**

COMPUTER MONITOR SWIVEL STAND



- Helps to eliminate eye and muscle strain caused by incorrect positioning of screen.
- Tiltable 12.5°° up and down.
- Can revolve 360°

$12.95

COMPUTER MONITORS

- **12"** Amber or green composite monitor **$59.95**
- **12"** Green TTL monitor **$108.95**
- **13"** RGB color monitor **$358.95**

We carry many monitors for your PC, XT and AT needs.

FLIP-TOP and SLIDE-TOP PC AND XT CASES

With all mounting hardware

$46.95

EXPANSION BOARDS

Speed up your IBM PC, IBM PC/XT and others. **BY UP TO 7½ TIMES!**

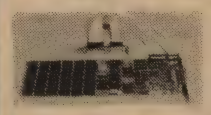
with the ALTEX **SpeedPac** 286™

only **$595.00**

640K MOTHERBOARD
XT COMPATABLE
O/K MEMORY
8 EXPANSION SLOTS
$129.95

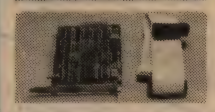
TURBO MOTHERBOARD 640K
XT COMPATABLE O/K
O/K MEMORY
8 EXPANSION SLOTS
$169.95

576K MEMORY EXPANSION CARD
O/K MEMORY
$49.95

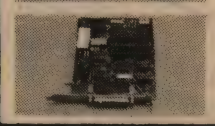


384K MULTIFUNCTION CARD
SERIAL, PARALLEL, GAME, CLOCK, CALENDAR PORTS
O/K MEMORY
$84.95

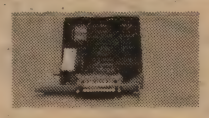
DISK I/O CARD
FLOPPY DISK CONTROLLER
SERIAL, PARALLEL, GAME, CLOCK, CALENDAR
$119.95



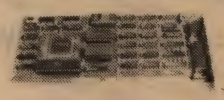
FLOPPY DRIVE CONTROLLER CARD
$39.95



SERIAL CARD
ONE PORT EXPANDABLE TO TWO
$26.95



PARALLEL PRINTER CARD
$26.95



COLORGRAPHICS CARD
$68.95

COLORGRAPHICS CARD
W/PARALLEL PRINTER PORT, ½ SIZE CARD
$89.95

MONOCHROME CARD
$69.95

MONOGRAPHICS CARD
W/PARALLEL PRINTER PORT
$89.95

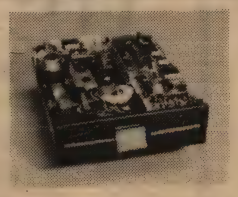
COMPUTER POWER SUPPLIES

135 WATT POWER SUPPLY XT COMPATABLE	$74.95
150 WATT POWER SUPPLY XT COMPATABLE	$89.95
200 WATT POWER SUPPLY AT COMPATABLE	$144.95

SUPER MODEM

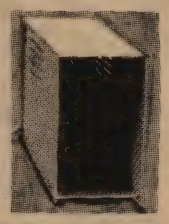
1200 SM-12

300-1200 BAUD
$225.00
HAYES COMPATABLE



1/2 HEIGHT FLOPPY DRIVE
360K **$89.95**

FULL HEIGHT FLOPPY DRIVE
360K **$79.95**



FULL HEIGHT SINGLE FLOPPY DRIVE CASE
• With power supply •
5¼" **REGULATED**
- 5V @ 1½ AMP
- 12V @ 1½ AMP

$47.95

(1)(800) 531-5369 ASK ABOUT OUR CUSTOM CABLE SERVICES (1)(800) 531-5369

ALTEX ELECTRONICS, INC.

call
(1) (800) 531-5369
(1) (512) 828-0503

CABLE ASSEMBLIES

At Altex Electronics, Inc., we carry most major cable assemblies to help you with your cable needs.

IBM PARALLEL PRINTER CABLES

PART #	DESCRIPTION	PRICES
PPC301-6	6 ft.	10.40
PPC301-10	10 ft.	12.00
PPC301-15	15 ft.	19.95
PPC301-25	25 ft.	24.95

IBM CABLE ASSEMBLIES

PART #	DESCRIPTION	PRICES
ATSC-6	6 ft. AT serial printer cable	14.95
KEC-10	10 ft. keyboard extention	3.95
MEC-10	10 ft. monitor extention	3.95
RGB-3	3 ft. RGB monitor cable	8.95
VMC-10	10 ft. video cable RCA to RCA	2.50
DDC-22	dual floppy controller cable	6.95
HDC-22	hard drive controller cable	7.95
MPC-6	power cord	3.95

DB25 CABLE ASSEMBLIES

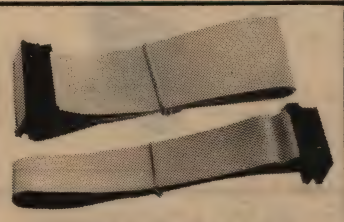
PART #	DESCRIPTION	PRICES
25MM-6	6 ft. male to male	14.95
25MM-10	10 ft. male to male	19.95
25MM-25	25 ft. male to male	24.95
25MF-6	6 ft. male to female	14.95
25MF-10	10 ft. male to female	19.95
25MF-25	25 ft. male to female	24.95

CENTRONICS CABLE ASSEMBLIES (36 pin male to male)

PART #	DESCRIPTION	PRICES
36MM-6	6 ft.	14.95
36MM-10	10 ft.	19.95

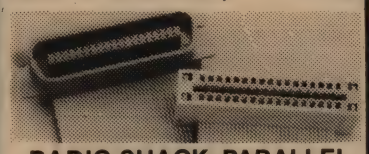
RIBBON CABLE ASSEMBLIES

We carry pre-assembled ribbon cables for your particular applications and offer custom ribbon cable services.



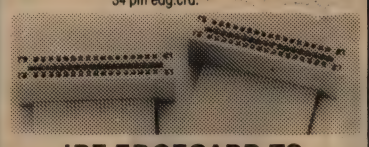
HARD DRIVE CABLE ASSEMBLIES

PART #	DESCRIPTION	PRICE
HDC-22	22" hard drive cable assy.	8.50



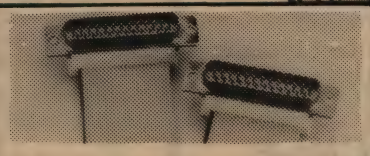
RADIO SHACK PARALLEL PRINTER CABLE

PART #	DESCRIPTION	PRICE
36P-34E	36 pin male 34 pin edg.crd.	8.50 + .68 per ft.



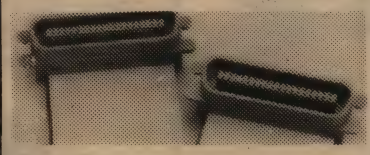
IDE EDGECARD TO IDE EDGCARD

PART #	DESCRIPTION	PRICE
10E-10E	10 pin edg.crd. to edg.crd.	3.80 + .20 per ft.
14E-14E	14 pin edg.crd. to edg.crd.	4.00 + .28 per ft.
20E-20E	20 pin edg.crd. to edg.crd.	4.50 + .40 per ft.
26E-26E	26 pin edg.crd. to edg.crd.	5.30 + .52 per ft.
34E-34E	34 pin edg.crd. to edg.crd.	5.90 + .68 per ft.
40E-40E	40 pin edg.crd. to edg.crd.	7.00 + .80 per ft.
50E-50E	50 pin edg.crd. to edg.crd.	8.50 + 1.00 per ft.



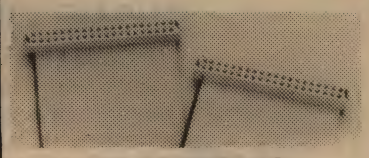
D-SERIES

PART #	DESCRIPTION	PRICE
9P-9P	9 pin male to male	5.64 + .18 per ft.
9P-9S	9 pin male to female	5.86 + .18 per ft.
9S-9S	9 pin female to female	6.08 + .18 per ft.
15P-15P	15 pin male to male	7.44 + .30 per ft.
15P-15S	15 pin male to female	7.62 + .30 per ft.
15S-15S	15 pin female to female	7.80 + .30 per ft.
25P-25P	25 pin male to male	8.96 + .50 per ft.
25P-25S	25 pin male to female	9.62 + .50 per ft.
25S-25S	25 pin female to female	10.28 + .50 per ft.
37P-37P	37 pin male to male	11.40 + .74 per ft.
37P-37S	37 pin male to female	12.46 + .74 per ft.
37S-37S	37 pin female to female	13.52 + .74 per ft.
50P-50P	50 pin male to male	25.96 + 1.00 per ft.
50P-50S	50 pin male to female	27.45 + 1.00 per ft.
50S-50S	50 pin female to female	28.94 + 1.00 per ft.



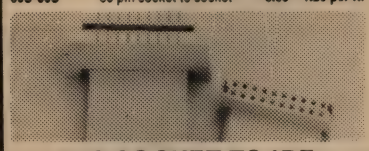
57 SERIES RIBBON CABLE ASSEMBLIES

PART #	DESCRIPTION	PRICE
5724P-P	24 pin male to male	10.00 + .48 per ft.
5724P-S	24 pin male to female	10.50 + .48 per ft.
5724S-S	24 pin female to female	11.00 + .48 per ft.
5736P-P	36 pin male to male	8.00 + .72 per ft.
5736P-S	36 pin male to female	10.00 + .72 per ft.
5736S-S	36 pin female to female	12.00 + .72 per ft.
5750P-P	50 pin male to male	16.75 + 1.00 per ft.
5750P-S	50 pin male to female	16.25 + 1.00 per ft.
5750S-S	50 pin female to female	15.75 + 1.00 per ft.



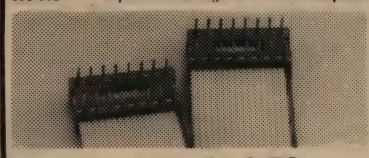
IDS SOCKET TO IDS SOCKET

PART #	DESCRIPTION	PRICE
10S-10S	10 pin socket to socket	2.00 + .20 per ft.
14S-14S	14 pin socket to socket	2.50 + .28 per ft.
16S-16S	16 pin socket to socket	2.75 + .32 per ft.
20S-20S	20 pin socket to socket	2.85 + .40 per ft.
26S-26S	26 pin socket to socket	3.50 + .52 per ft.
34S-34S	34 pin socket to socket	4.10 + .68 per ft.
40S-40S	40 pin socket to socket	4.50 + .80 per ft.
50S-50S	50 pin socket to socket	6.15 + 1.00 per ft.
60S-60S	60 pin socket to socket	6.65 + 1.20 per ft.



IDS SOCKET TO IDE EDGCARD

PART #	DESCRIPTION	PRICE
10S-10E	10 pin socket to edg.crd.	3.20 + .20 per ft.
14S-14E	14 pin socket to edg.crd.	3.50 + .28 per ft.
20S-20E	20 pin socket to edg.crd.	3.75 + .40 per ft.
26S-26E	26 pin socket to edg.crd.	4.75 + .52 per ft.
34S-34E	34 pin socket to edg.crd.	5.40 + .68 per ft.
40S-40E	40 pin socket to edg.crd.	6.45 + .80 per ft.
50S-50E	50 pin socket to edg.crd.	7.85 + 1.00 per ft.



IDD DIP PLUG TO IDD DIP PLUG

PART #	DESCRIPTION	PRICE
14D-14D	14 pin dip plug cable	2.60 + .20 per ft.
16D-16D	16 pin dip plug cable	2.75 + .32 per ft.
24D-24D	24 pin dip plug cable	3.75 + .48 per ft.
40D-40D	40 pin dip plug cable	7.50 + .80 per ft.

Give yourself the advantage—protect your computer and save money with these DataShield® products!

(#1 for the money!*)

ALTEX SPECIALS

★ AT-500 $535.00

★ TURBO 350 $453.00

A. AT 1500A — 1500 watt backup power source with battery, 140 lbs.—**$1,273.00**
B. AT 1200A — (Not shown) 1200 watt backup power source with battery, 134 lbs.—**$959.00**
C. AT 800A — 800 watt backup power source with battery, 72 lbs.—**$602.50**
D. AT 500A — 500 watt backup power source with battery, 58.5 lbs—**$535.00**
E. AT 350A — 350 watt Turbo backup power source with battery, 39.5 lbs.—**$453.00**
F. XT 300A — 300 watt backup power source with battery, 37.5 lbs.—**$370.00**
G. PC 200A — 200 watt backup power source with battery, 24 lbs.—**$255.50**
H. P150 — Power Center, 10 lbs.—**$107.40**
I. 110 AMS — Automatic master switch surge protector, 6 socket, super filter, 1 lb.—**$66.00**
J. S100 — Surge protector, 6 socket, low voltage alarm, super filters, 1 lb.—**$55.00**
K. S85 — Surge protector, 6 socket, super filters, on/off switch, 1 lb.—**$49.50**
L. S75 — Surge protector, 4 socket, on/off switch, 1 lb.—**$38.50**

*As tested by the Professional Software Programmers Association for evaluation by Computer Retail News Magazine.

Add to your library with these informative books from SAMS!

The Best Book of: LOTUS™ 1-2-3™
Alan Simpson
272 pgs., 8 x 9¼, softbound. $14.95

The Best Book of: Symphony®
Alan Simpson
396 pgs., 7½ x 9¾, softbound. $21.95

The Best Book of: Framework™
Alan Simpson
362 pgs., 7½ x 9¾, softbound. $17.95

The Best Book of: Multiplan™
Alan Simpson
160 pgs., 8 x 9¼, softbound. $12.95

Handbook for Your IBM® PC
Frenzel and Frenzel
336 pgs., 8 x 9¼, softbound. $15.95

IBM® PC Troubleshooting & Repair Guide
Robert C. Brenner
192 pgs., 8½ x 11, softbound. $19.95

The PC DOS™ Companion
Murtha and Petrie
208 pgs., 8 x 9¼, softbound. $15.95

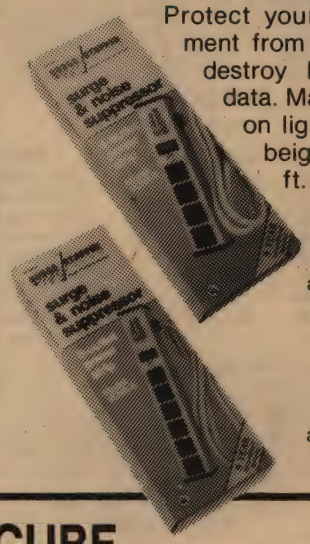
Call and come by for more information on our complete line of SAMS Computerfacts, books and guides.

10731 Gulfdale, San Antonio, Tx. 78216
10705 Metric, Austin, Tx. 78758

STORE HOURS: 8:00-6:00 M-F, 10:00-2:00 SAT.

SURGE PROTECTOR
OUTLET STRIPS

Protect your valuable equipment from surge spikes that destroy IC's and valuable data. Master on/off, power on light, circuit breaker, beige enamel case, 6 ft. cord.



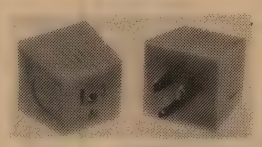
VCN4-6
4 circuit with surge and noise suppression
$29.95

VCN6-6
6 circuit with surge and noise suppression
$34.95

CUBE
SURGE PROTECTORS

Here's a lot of protection in a small package.
- Indicator light
- Easily transportable
- Low cost protection

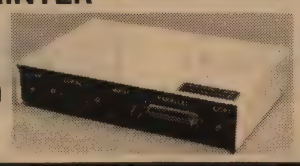
$4.95



64K UNIVERSAL PRINTER BUFFER INTERFACE

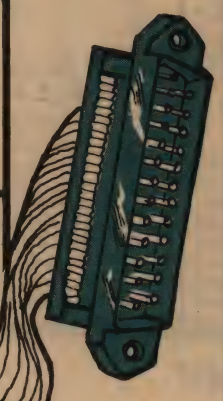
CONVERTS:
Serial to Serial
Parallel to Parallel
Parallel to Serial
Serial to Parallel

$195.00



64K PARALLEL PRINTER BUFFER

Centronics female connections
$95.00

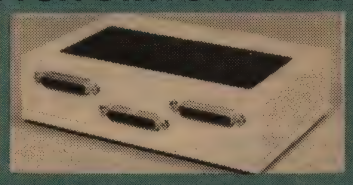


DATA TRANSFER SWITCHES

Features: STRONG METAL CASE • RFI/EMI PROTECTION • NO POWER REQUIRED • GOLD PLATED CONTACTS • COMPACT, BUILT TO LAST

(SERIAL-25 PIN)			(PARALLEL-36 PIN)		
AB25-2	2 PORT SERIAL (25 PIN)	65.00	AB36-3	3 PORT PARALLEL	107.50
AB25-3	3 PORT SERIAL (25 PIN)	82.50	AB36-4	4 PORT PARALLEL	120.00
AB25-4	4 PORT SERIAL	95.00	AB36-5	5 PORT PARALLEL	145.00
AB25-5	5 PORT SERIAL	115.00	AB25-X	SERIAL CROSSOVER SWITCHBOX	87.50
AB36-2	2 PORT PARALLEL	92.50	AB36-X	PARALLEL CROSSOVER SWITCHBOX	117.50

ECONOMY PUSHBUTTON SWITCHBOXES



Features: DURABLE PLASTIC CASE FOR USE IN LOW RFI/EMI AREAS • NO POWER REQUIRED • PUSHBUTTON OPERATION • LIGHT WEIGHT

AB25-PB	2 PORT SERIAL	44.00	AB36-PB	2 PORT PARALLEL	54.00

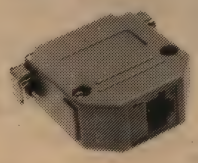
SOLVE YOUR INTERCONNECTION PROBLEMS WITH OUR PROBLEM SOLVERS
DB-25 (RS-232)

- GENDER CHANGER (AGC-M, AGC-F) **$7.95**
- GENDER CHANGER (AGC-36M, AGC-36F) **$16.95**
- NULL MODEM ADAPTOR **$9.95**
- MINI PATCH BOX **$9.95**
- MINI TESTER **$19.95**
- SURGE PROTECTOR **$14.95**

MODULAR TO RS-232 ADAPTER KITS

Turns any 25 pin serial port to a modular jack, in either 4, 6, or 8 position. Use these with the modular cable assemblies to make your own custom cables.

- MA-4M—RS-232 MALE TO 4 PIN MODULAR **4.50**
- MA-4F—RS-232 FEMALE TO 4 PIN MODULAR **4.50**
- MA-6M—RS-232 MALE TO 6 PIN MODULAR **4.50**
- MA-6F—RS-232 FEMALE TO 6 PIN MODULAR **4.50**
- MA-8M—RS-232 MALE TO 8 PIN MODULAR **4.95**
- MA-8F—RS-232 FEMALE TO 8 PIN MODULAR **4.95**

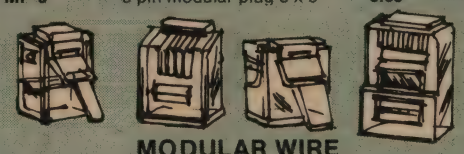


MODULAR CONNECTIONS
TELEPHONE MODULAR CABLE ASSEMBLIES (plug to plug)

PART #	DESCRIPTION	PRICES
MC-4	4 pin cable	1.00 + .09 ft.
MC-6	6 pin cable	1.00 + .12 ft.
MC-8	8 pin cable	1.25 + .15 ft.

MODULAR PLUGS

PART #	DESCRIPTION	EA	100 EA
MP-4M	4 pin mini handset modular	0.25	14.95
MP-4	4 pin modular plug 4 x 6	0.25	14.95
MP-6	6 pin modular plug 6 x 6	0.25	15.95
MP-8	8 pin modular plug 8 x 8	0.35	26.95



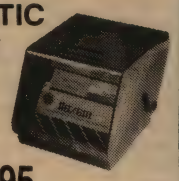
MODULAR WIRE

PART #	DESCRIPTION	PRICES
MW4-100	100 ft. 4 conductor	6.95
MW4-500	500 ft. 4 conductor	29.95
MW4-1000	1000 ft. 4 conductor	49.95
MW6-100	100 ft. 6 conductor	8.95
MW6-500	500 ft. 6 conductor	39.95
MW6-1000	1000 ft. 6 conductor	64.95
MW8-100	100 ft. 8 conductor	12.95
MW8-500	500 ft. 8 conductor	54.95
MW8-1000	1000ft. 8 conductor	89.95

DSDD DISKETTES

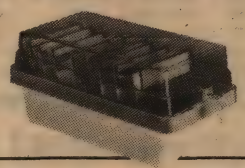
Lables and sleeves included
10/$12.00
20/$20.00
100/$90.00
LIFETIME GUARANTEE

ANTI-STATIC 5¼ FLOPPY DISK STORAGE



Storage for up to 70 diskettes
$9.95

5¼ DISKETTE STORAGE FILE

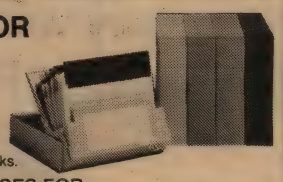


Locking security storage case for up to 100 diskettes
$14.95

MINI DISKETTE STORAGE

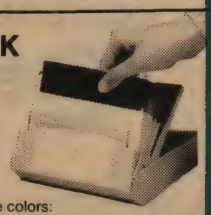
Locking security storage for up to 50 diskettes
$11.95

DISK KOLOR GUIDE™



Dust free protection storage files for up to 75, 5¼ floppy disks.
5 DISKETTE CASES FOR COLOR GUIDING YOUR DATA **$9.95**
Colors included are:
Red • Blue • Yellow • Green • Grey
(5 index and colored diskette label sets included.)

DISK PACK FILE™ 15



Dust free protection storage files for up to 15, 5¼ floppy disks.
Available in these colors:
Grey • Red • Green • Yellow • Blue • Tan
$2.25 ea. (Includes colored diskett labels.)

Call toll free!

1-800-531-5369

IN TEXAS— **San Antonio: (1)(512) 828-0503**
Austin: (1)(512) 832-9131
FAX— **(1)(512) 340-2409**

ORDERING AND SHIPPING INFORMATION

TERMS: Minimum order $10.00 We accept Visa, Mastercard, American Express and C.O.D. orders. Add $3.00 shipping and handling, add $1.90 for C.O.D. Texas residents add 5.625% sales tax. Prices are subject to change without notice. We are not responsible for typographical errors.

Call and come by for information and prices on connectors, round and ribbon cable assemblies and your other electronic connector and part needs.

ALTEX ELECTRONICS, INC.
10731 Gulfdale, San Antonio, TX 78216
10705 Metric, Austin, TX 78758

*We carry the complete line of **SAMS** Computerfacts, books and guides!*

Ask The Guru
continued from page 83

volves reading location $BF98 in main memory. Figure 2 shows details. This location will also tell you whether a compatible clock is installed, how much memory is present, and if any 80 column firmware exists.

By the way, there are two free Apple manuals that have lots of this sort of information in them. These are the *Apple IIc Programmers Guide to the 3.5 ROM* (#A2L4037) and the *About Your Enhanced IIe* (#A2L2072). You probably will want to pick both of these up.

I Need a RAM Card Snooper Routine

Figure 3 is a listing of a short routine that will copy up to 56 pages (or 27 ProDOS blocks) from a slot #4 Apple one megabtye RAM card into main memory. It will do so with or without an operating system and can easily be used after a cold reset.

The routine has outstanding diagnostic and/or analysis possibilities.

You can set the number of pages read by the hex value poked into $0F01. Use $01 for a single page of 256 bytes, $02 for a single ProDOS block of 512 bytes, up to a maximum of $38 for 56 pages.

The actual memory dump will begin in the RAM card at the address you select, and will be moved down into main memory starting at location hex $6000. The upper limit is set to $9900 to prevent interference with DOS 3.3 or ProDOS.

The starting address is high enough in main RAM that you can warm reboot ProDOS around it without hurting the copy.

Several reminders about the RAM card. Always set your addresses in low-mid-high order. Remember that any RAM card read or write will auto-post-increment the RAM card address. And, remember that you must not try to read or write to the RAM card with indexed addressing, unless you intentionally cross a page boundary.

To use with a slot other than slot #4, note that $C0D0 through C0D2 are the low-mid-high address for slot #5, while $C0D3 is the data read location, and so on up and down the line of slots. Thus $C090 starts slot 1, $C0A0 slot 2, etc.

More insider information on all of this appears in my RAM Card Disassembly Script.

How About An Easy Contest This Time?

Right on. As usual, a copy of my *Incredible Secret Money Machine* to the best ten entries, and an all expense paid (FOB Thatcher, AZ) tinaja quest for two to the overall winner.

Since not just anybody can be trusted with such a powerful and useful module as a RAM card snooper, step #2 of Figure 3 is written in a secret, very mysterious, and highly arcane code. Just tell me, in English, exactly what is happening here, along with your suggestions for some powerful new uses for this routine.

Only let's play fair. You are automatically disqualified if you can "sight read" step two. And, if you eat this sort of thing for lunch, how about 20 57 FC instead?

Or perhaps take a $00 instead.

Actually, this super-secret encryption technique is so powerful and so good, that maybe we could even talk Apple into using it someday.

What do you think?

Tell Me All About The ProDOS Applewriter NULL and US Imbedded Commands

Many printers require the

continued on page 168

(Values are shown for a slot #4 RAM card.)

1. **Do a reset or an absolute reset WITHOUT turning of the power. Then CALL-151 to get into the monitor.**
2. **Enter 0F00: A2 38 A0 00 84 06 A9 60 85 07 AD C3 C0 91 06 C8 D0 F8 E6 07 CA D0 F3 60**
3. **Set the RAM card address at $C0C0 low, $C0C1 medium, and $C0C2 high.**
4. **Do a 0F00G. The selected pages or blocks of the RAM card will be moved to main memory, starting at $6000 and ending at 98FF.**

Fig. 3 - A "snooper" for the Apple RAM card.

NEW FROM DON LANCASTER

APPLEWRITER™ LASERWRITER™ UTILITIES

Five diskette package gives unmatchably superb page graphics for your Apple IIe.

Unlocked. Requires ProDOS Applewriter, Apple IIe and an Apple Super Serial Card.

$49.95

FREE Demo Pack
FREE Laser Helpline

VISA/MC

SYNERGETICS
Box 809-CSL
Thatcher, AZ 85552
(602) 428-4073

BUY DIRECT AND SAVE

IBM COMPATIBLE

640K SUPER XT MOTHERBOARD w/BIOS (OK)	$118
640K XT TURBO MOTHERBOARD w/BIOS (OK)	$129
MONO/GRAPHIC (w/Printer) **Ver II** (Hercules Compatible)	$ 89
MONOCHROME CARD	$ 68
COLOR GRAPHIC CARD (RGB & 2 Composites)	$ 72
I/O II PLUS CARD (Par/Ser/Game/Clk/Cal/Disk)	$ 79
DISK I/O CARD (Disk Controller & I/O II PLUS)	$ 99
FLOPPY DISK CONTROLLER CARD (2 Internal & 2 External) w/cable	$ 45
PARALLEL PRINTER CARD	$ 25
RS 232C (Supports 2 Adapters) 1 Optional	$ 39
576K RAM CARD (Long or Short) OK	$ 45
384 MULTIFUNCTION CARD (AST 6 PAK Compatible) OK	$ 89
MOUSE	$ 69
DATA SWITCH BOX (RS232 or Centronics) AB	$ 45
ABDE	$ 65

APPLE COMPATIBLE

EXTENDED 80 COL w/64K Apple IIe	$ 39
SUPER SERIAL CARD w/Cable & Instructions	$ 69
Z-80 CPM CARD (Microsoft Compatible)	$ 35
80 COLUMN CARD w/Inverse (Videx Compatible) Apple II+	$ 58
16K RAM CARD (Apple II+)	$ 37
EPSON PRINTER CARD (Parallel) w/Cable	$ 37
GRAPHIC PRINTER CARD w/Cable	$ 48
128K RAM CARD w/Disk and Instructions (Titan, Saturn Comp.)	$ 99
DISK DRIVE II Interface Controller Card	$ 39

We guarantee to beat any prices in this issue. CALL FOR FULL SYSTEM QUOTES.

ALL PRODUCTS FULLY ASSEMBLED, TESTED & WARANTEED

M-F 9-6 EST

SEND FOR FREE CATALOG
SHIPPING & HANDLING:
Under $100—10% Over $100—5%

SCHOOL P.O. ACCEPTED

COMPUTER SUPPLY
P.O. BOX 164C, VALLEY STREAM, NY 11582
(516) 239-1939 Dealer Inquiries Invited

DISK-KING®
Premium Quality Diskettes
From the Kings of Magnetic Media
Incredible Value

Direct from the main source — **the leader and the inventor** of magnetic media, quality unlabelled diskettes with hub rings, tyvek sleeves, write-protect tabs, user ID labels and a lifetime warranty. New and individually certified 100%, factory sealed in lots of 25. Private labelling available.

SS-DD Quantity Discounts Available DS-DD
55¢ .....5.25"/48 TPI..... 62¢
$1.29 ..... 3.50"/135TPI $1.65
DS-HD 96 TPI for the "AT" $1.60

from the leader of magnetic media FREE! Flip 'n' File with each box of 3.5" SS or DS diskettes. while supply lasts!

Factory Sealed Box of Ten Qty. 5 BX
SS-DD Lifetime Warranty DS-DD
75¢ ..... 5.25"/48 TPI..... 97¢
$1.39 ..... 3.50"/135TPI w/Flip 'n' File $1.97
DS-HD 96 TPI for the "AT" $2.19
*5.25" Pre-packaged in 3M's Flip 'n' File/15-$4/box extra
8.00" SS-SD w/WP . $1.50
$1.84 ..... 8.00" W/WP 2.05
Call for our SUPER LOW PRICES on 3M Data-Cartridges, tapes and storage boxes.
(3M Headcleaning Kits ..... 6.95 + 2.00 shpg)

BASF FlexyDisk qualimetric ...the inventor of magnetic media!

SS-DD Factory Sealed Box of Ten DS-DD
Lifetime Warranty
72¢ .....5.25"/48 TPI..... 83¢
1.35 ..... 3.50"/135TPI 1.87
DS-HD 96 TPI for the "AT" $1.95

SUPER SALE ON
Nashua Boxes

5.25" SS-DD Factory Sealed Box of Ten $6.10
5.25" DS-DD Factory Sealed Box of Ten $6.60
5.25" DS-HD Factory Sealed Box of Ten $19.50
3.50 DS-DD Factory Sealed Box of Ten $18.70

COLOR DISKETTES
Premium Quality U.S.A. made
AT Affordable Prices!
▶ SUPER SPECIAL ◀

SS-DD ■ Factory sealed in lots of 25 with: DS-DD
60¢ *Tyvek sleeves, w/p tabs, user ID labels* Exceeds ANSI 68¢
specs Certified 100%—70% clipping level *Lifetime warranty. Many color options
DS-HD 96 TPI Color diskette for the "AT" $1.75

RIBBONS		STORAGE	
Epson MX 70/80	$2.95	3M's Storage Boxes	$8.90
Epson MX 100	$3.99	Amaray Media Mate	$8.90
Okidata 80/82/83/92/93	$1.35	Disk Minder II-75	$6.99
Apple Image Writer	$3.99	Micro Disk Minders-36	$6.45

TERMS: No surcharge on VISA or MasterCard. American Express also accepted. COD orders only add $3.00. Prepaid orders deduct 2% cash discount. POs accepted from corporations rated 3A2 or better, government and schools on net 30 basis. FPO, APO, AK, HI, PR & CN add 5%. No sales tax outside Utah! Minimum order $30.00
SHIPPING: Add $3.00 for 100 diskettes or first 4 lbs.
"WE BEAT ANY PRICE! (APPLES TO APPLES)
TELEX: 755485 Answer Back MYSECSLC
Toll-Free Order Line: 1-800-523-9681
Inquiries & Info Line: 1-801-942-2273

DISKCOTECH
DISKCO TECHNOLOGIES, INC.
Hours: 7 AM-6 PM (Mtn Time)

Ask The Guru
continued from page 167

ASCII $00 or NULL command to do certain things. This is incredibly stupid, because the NULL is specifically reserved as an ASCII control command that is not supposed to do anything.

Nonetheless, things being the way they are, some printers and some cards need NULLs to operate properly.

In the DOS 3.3e version of Applewiter, NULLs were specifically excluded, and a custom patch was needed to let you imbed any NULLs in your printer control commands. Write or call me if you need a free copy of this patch.

The problem was sort of fixed in ProDOS Applewriter 2.0 or 2.1.

For the stock solution introduced a new problem for other printers. And Apple never bothered telling anyone about handling NULLs in the first place.

What they did was let you substitute a [__] ("control-underline") for a NULL. [__] also goes by the names of a US users separator or as a CHR$31. Anytime you need a NULL in either of these programs, all you have to do is verbatim insert a [__] instead.

Unfortunately, many high performance printers demand a US or a CHR$31 to activate certain special features. For instance, the HMI commands on daisywheel printers, and some extended text modes in dot matrix printers require this control character as part of a command string.

So, some of you may need a way to "undo" the stock automatic substitution of [__] for a NULL. The solution for the ProDOS Applewriter 2.0 appears as Patch B.12 in my *Applewriter Cookbook* (SAMS #22460).

The gist of the 2.0 patch is to change $4C37 of AWD.SYS to your desired substitution character, using a $00 if you want no NULL substitution at all.

And, for version 2.1, we'll have to go clear on to the next question . . .

Tell Me About The ProDOS Applewriter 2.1 Patches

ProDOS Applewriter 2.1 is a variation on the older 2.0 version. Its main difference is that certain older third party dot matrix printers and interface cards are now made ProDOS and Applewriter compatible.

A free upgrade has been available from your Apple dealer now since November of 1984. But there is no point in upgrading unless you have these problems to start with. Most printers and cards have long since corrected their firmware to be fully ProDOS compatible.

Unfortunately, the 2.1 new version progressively gets a few dozen bytes longer than the 2.0 version. Which means that most of the essential 2.0 patches shown in my *Applewriter Cookbook* will not run properly on 2.1.

For far too many months now, I have been promising many of you a full set of patches for ProDOS Applewriter 2.1. So, what I think we will do is run a patch a month here for a while.

In general, there is one major patching difference between 2.0 and 2.1. The AWD.SYS on 2.0 is a SYSTEM type file. The AWD.SYS on 2.1 is a $0C type file. Thus, 2.0 requires a ",TSYS" following a patching BLOAD or BSAVE, while version 2.1 requires a ",T$10C" instead.

Let's get the easy patches out of the way first. The Prefixifier "patch" stays the same. The AIOifier and Grapplifier patches are no longer needed, as 2.1 solves this particular problem on its own. And the Bootifier patch also stays the same, since it occurs so early in the code.

As we've just seen, the $00 character is reserved for a marker in all newer versions of Applewriter, so the stock program will accept and then substitute a US or a [__] ("control-underline") for a NULL.

So, if your printer or whatever needs a NULL, all you have to do is use [__] just like you did with ProDOS Applewriter 2.0.

But if you need [__] for a US or a CHR$31 printer command, Figure 4 shows you the Nullifier patch for 2.1.

What you do is make a one byte substitution for the NULL character. If you want no NULLs, substitute $00. If you need no US or CHR$31, then substitute $1F. If you must have both a US and a NULL, then you will have to find some other control character that you do not need, and substitute it instead.

Stay tuned for next month's exciting new 2.1 patch. Be the first one in your neighborhood to collect them all!

What Is This Month's Laserwriter Scam?

Uh, would you believe custom business stationery?

Done, of course, with both the Applewriter and the Laserwriter, and helped along with a few of my whiz-bang utilities.

Every business, however large or small, needs their share of letterheads, envelopes, business cards and such. Traditional suppliers of these often require very large minimum quantities, have long setup and delivery times, do not give you exactly what you want, and leave you with a staggering bill.

These are two different ways

continued on page 170

This patch is for ProDOS Applewriter 2.1 version AWD.SYS only. AWD.SYS runs only on the 80 column IIc or the 128K IIe.

This patch lets you redefine the substitute NULL control command from its default value of [_], $1F, US, or CHR$31.

This patch works by replacing the control command to the desired substitution.

Note that this patch is needed ONLY if you require use of [_] for another printer command.

1. **Make a third or higher backup copy of ProDOS Applewriter 2.1, using the filer utilities.**
2. **Get into /BASICS.SYS. Then CALL -151 to get into the monitor.**
3. **BLOAD AWD.SYS, A$2000, E$6020, T$0C, D2**
4. **Verify $4C40 as a $C9 and $4C41 as the current null substitution character. (stock value = $1F)**
5. **Change $4C41 to the intended control character. Use $1F to return to a default [_], or $00 for no NULL character at all.**
6. **Verify $4C40-4C41 for a $C9 followed by the control command you just selected.**
7. **BSAVE AWD.SYS, A$2000, E$6020, T$0C.**

Fig. 4 - A NULL patch for ProDOS Applewriter 2.1.

NEW FROM
DON LANCASTER

HANDS-ON BOOKS		UNLOCKED ✱ SOFTWARE	
Apple Assembly Cookbook	21.50	Absolute Reset IIe & IIc	19.50
All About Applewriter	12.50	Applewriter Toolkit (Dos 3.3e)	39.50
Applewriter Cookbook	19.50	Applewriter Toolkit (ProDOS)	39.50
Enhancing your Apple vol I or II	15.50	Applewriter/Laserwriter Utilities	49.50
Micro Cookbook vol I or II	15.50	Laserwriter Demo Pack	FREE
CMOS Cookbook	14.50	Apple RAM Card Disassy. Script	24.50
TTL Cookbook	12.50	Appleworks Disassembly Script	CALL
TV Typewriter Cookbook	12.50	Enhance vol I Companion Disk	19.50
Active Filter Cookbook	14.50	Enhance vol II Companion Disk	19.50
Incredible Secret Money Machine	7.50	Assembly CB Companion Disk	19.50
Postscript Ref. Manual (Adobe)	21.50	Applewriter CB Companion Disk	24.50
Postscript Tutorial (Adobe)	16.50	Classic Cell Animation Demo	12.50

FREE VOICE HELPLINE VISA/MC

SYNERGETICS
Box 809-CS Thatcher AZ 85552 (602) 428-4073

30 KEY STAND ALONE (E)EPROM PROGRAMMER - ONLY $495.00

21 DAY NO OBLIGATION TRIAL

WRITER-I™
The best Low Cost fully Stand Alone (E)EPROM Programmer on the market from BYTEK – ALWAYS SETTING HIGHER STANDARDS

STANDARD FEATURES
- ☑ 30 Key Full Travel Keyboard
- ☑ 6 Character 0.6" 7 segment LED
- ☑ 32K Byte x 8 RAM (256K Bit)
- ☑ Supports all popular single voltage EEPROMs & EPROMs from 2716 - 27256
- ☑ Fast Intelligent Algorithms
- ☑ Fully software controlled programming (no configuration plugs required)
- ☑ Stand Alone Operation (includes Data Editing)
- ☑ RS232 Serial Port supports over 12 formats
- ☑ Baud Rate: 110 - 9600

Options: PROMsoft IBM-PC Compatible Software Driver

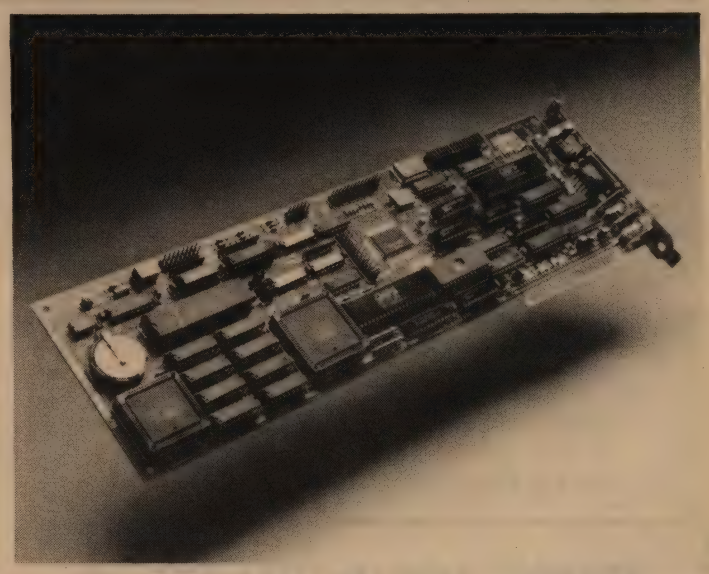
FREE *UV ERASER*
(Model BUV-3C)
while supply lasts

For more information call:
Toll Free – 800-523-1565
In Florida – 1-305-994-3520

MADE IN THE U.S.A.

BYTEK® CORPORATION
INSTRUMENT SYSTEMS DIVISION
1021 South Rogers Circle • Boca Raton, Florida 33431

New Enhanced Graphics Adapter With I/O Capabilities



AST Research Inc., announced recently a new addition to its family of graphics adapters. Designated the AST-3G Pak, this new enhanced graphics adapter with integrated I/O functions was designed specifically for use with IBM's new PC/XT computer.

Since the new IBM PC/XT can be populated with up to 640K bytes of system memory, the AST-3G Pak is designed for users that don't require added memory, but would like input/output (I/O) capability. This new card integrates the functions of an I/O board with all the popular graphics adapter modes, all on one card.

Although the AST-3G Pak was designed with the IBM PC/XT in mind, it also works with the older IBM PC/XT/AT computers, as well as the new IBM AT. The standard AST-3G Pak is compatible with the IBM Enhanced Graphics Adapter (EGA), the Hercules Graphics Card, the IBM Color/Graphics Adapter (CGA) and the IBM Monochrome Display and Printer Adapter (MDA). It also offers a standard serial port, parallel port, clock/calendar with battery backup and an optional game adapter port.

Designed for business/presentation graphics, CAD/CAM, graphic arts and desktop publishing applications, the

continued on page 193

Echo Off
continued from page 54

Writing A Batch File

There are three ways to write a batch file, just be sure when naming it to assign the extension .BAT:

WITH WORD PROCESSOR. With your favorite word processor, open a file with the correct extension. List each command on a separate line. Save to disk. When you wish to run it, type in the name (no extension) at a DOS prompt. The computer will attempt to run the commands in order. Use hard line breaks and beware of programs that insert special formatting characters.

WITH EDLIN.COM: DOS provides a line editor which can be used for writing batch files, or, for that matter, any kind of text files, including simple word processing. The nice thing about EDLIN is it numbers the lines and includes methods for editing batch files without having to re-write the whole thing.

EDLIN is invoked by typing at the prompt:

A>edlin b:filename.bat

Two kinds of prompts are provided. At the left margin appears an *, which is a command prompt. When invoked, a line number prompt appears indented about five spaces. This is the prompt for writing the actual batch file.

Then at the * prompt, type an "L" to list an existing batch file, or type an "I" (followed by Enter) to access the first interrupt, numbered "1." To interrupt at any other line number, type the number, followed by a space and an "I" which stands for "Interrupt." To edit a single line, merely enter the line number at the command prompt. End each line with the Enter key. When you are satisfied with your batch file, type F6 (to exit from the line), "E" to write the file to disk and exit back to DOS.

WITH "COPY CON" COMMAND. This method has the drawback of forcing you to re-write the entire batch file each time it is changed; but it is swift and easy to do. Type at the prompt:

A>copy con b:filename.bat

The screen will move to a new line. Type in each command, followed by enter. When done, hit F6, and file will write to disk indicated in the original command. If you wish to check your work, run the file, or use the TYPE command to write it quickly to screen.

How To Do It...

AUTOEXEC batch files are named after their function. When a system disk is booted in the computer, the COMMAND.COM file immediately and automatically looks for, loads, and executes any AUTOEXEC file it finds. Thus it is possible to customize the auto-loading features of any program disk. Simply by assigning this name, a file can be written which controls the process.

Run A Series Of Programs

Let's say you want to run a series of programs written in BASIC. Write into each BASIC program a means of exit back to system, either automatic or at the discretion of the user. If that is too difficult, then insert a note in the batch file, telling the user how to break and exit from each program. You must copy the system files, BASICA.COM, and the .bas files to the disk!

Now write the autoexec.bat:

```
echo off
echo    You may exit from each
        musical work by hitting
echo    Control-Break, and typing in
        "System." Next
echo    selection will play
        automatically. Enjoy!
pause
basica willtell
basica welltemp
basica chopin
```

When the disk is inserted and the computer turned on, the program will run automatically. The disk will echo the 3-line message to the screen, then wait until the user "strikes any key." Then, it will proceed in order to play the William Tell Overture, followed by the Well-Tempered Clavier, followed by a Chopin Etude (All available free on many electronic bulletin boards).

Load A Game With Instructions

Many games are already setup to load automatically and some have hidden files that cannot be run from DOS. However, many can be run from DOS. For example, GATO is a submarine simulation game, and a very good one (@Spectrum Holobyte Inc., 1984). The disk includes text about the U-Boat class, its characteristics, and its history in World War II. The control keys are listed in the printed documentation that come with the disk. My grandchildren came to visit, so I prepared the disk for their use. The disk must be systemed, and include all the game files, along with (from DOS) the MORE.COM utility. The autoexec file (with explanations bracketed):

```
echo    off
echo    [here I inserted a
        welcoming message with
        brief]
echo    [instructions on how to
        scan the text and exit]
echo    [to the next step]
more    <history.txt [this brings
        up the 6-page text]
gato    [this loads the game]
```

Thereafter, the prompts and menus of the game itself control the sequence of events. Note that for short snatches of text, the ECHO command is fine; but that for longer texts, MORE saves a lot of typing.

Setup For Work Sessions

Let's write an automatic setup for regular work sessions with SideKick and a RAM disk resident in memory, and the color attributes of the RGB screen set for green characters. Be sure the necessary files are on the disk, in this case SK.COM, the color and the RAM disk utilities. The name of the file must be AUTOEXEC.BAT:

```
echo off
Kolor/2          [the color utility]
sk               [SideKick loading
                 command]
membrain 180     [the RAM disk
                 command]
path a:\;b:\;c:\ [so that all session DOS
                 commands will look for
                 files in all three places]
```

Access Multiple Texts

As a teacher at a college that now is loaded with PCs, I am eager for students to become familiar and comfortable at the keyboard and find new instructional uses. So I decided to put selected readings and interactive exercises on disks which they could check out at the computer lab.

I had a secretary type the readings onto the master disk. I wrote several self-grading tutorials in BASICA with mutiple choice answers (when they get a question right, the computer plays a few notes from the theme "Hail to the Conquering Chief!" It also keeps track and reports their overall performance). I loaded a simple calculator program and several lists of statistics.

Now I needed a front end for all these mixed materials. I wrote an AUTOEXEC batch file which brings up instructions and a table of disk contents. For each reading and exercise on the disk, I provided a code word. Then I wrote a separate little batch file for each procedure, under the file name "codeword.bat."

Students could print out (in hard copy) the contents and the code names by the separate little batch file. Keeping this on hand, they could enter any reading or exercise just by typing at the DOS prompt a code name.

For example, to select a reading "Chomsky and the New Structuralism" (text file named: chomsky.mss), one would type:

A>chomsky

The batch file, named "chomsky.bat" looks like this:

```
echo off
more <b:chomsky.mss
```

While scrolling (and presumably reading) the text, students could take notes by turning on the printer and using the keyboard "PrtSc" routine (explained to them in the initial instructions) to print selected screens to hard copy.

The BASICA testing programs (for example:chomsky.bas) were assigned a code name in the list of contents. Rather than bother students with loading the BASIC interpreter and the program, the student merely entered the code name and the batch files did it for them. The code name in this case was "chtest"; and the batch file was named, CHTEST.BAT, and looked like this:

```
echo off
basica chomsky.bas
```

The system was rather primitive (a more sophisticated note-taking capability would be nice) but it worked well and the students seemed to enjoy working at the computer.

One last point: When booting a disk, one can at any time abort the batch file and return to DOS with the command: Control-Break. Experienced users can use this means to bypass the automatic batch features, in order to go directly to other programs and batch commands on the disk without having to endure the instructions and the order of priority built into the AUTOEXEC file.

This is by no means a complete description of the uses and writing of batch command files. It is intended mainly to be illustrative, to show that the matter is not arcane and abstruse, but down-to-earth and accessible to the average computer user. Once you have digested the contents of this piece, you will be prepared to venture into the DOS Manual which provides all the commands, although it doesn't really enlighten us about how the utility can be used. This failing we have tried to remedy here. ●

Ask The Guru
continued from page 168

the Laserwriter can solve these hassles once and for all. You can use the Laserwriter just for pre-press, or you can actually print the letterheads on demand when and as they are needed.

The on-demand method will appeal to most small business, tech venture, or craft needs. No letterheads ever need be pre-printed ahead of their actual use. Small quantities are a snap.

Any changes or adjustments, however major, can be made at any time. You can even print custom letterheads instantly at a fair, swap meet, yard sale, mall, or trade show, and sell as few as a dozen of each at a profit.

Thanks to the magic of *Postscript*, you can put the letterhead image, the body of the letter, and even your signature directly into the Laserwriter. You have to do this only once. Then you simply erase and rewrite each new name and address, letting your fully custom letters pour out at maximum speed.

If you are very careful about your choice of paper and your artwork images, the quality will be more than acceptable for all but the most critical of business uses. I have found that a black and gray letterhead on Guilford Gray classic laid stationary seems to work well for me.

Best of all, there is no hint whatsoever of "computereeze" about the final letter. Except that it is so good that it could not possibly be anything else.

You can experiment with various colors of paper and toners. Repeat passes through the printer can be use for color and duotone effects.

The advantages of the on-demand letterhead method are that it is fast, easy, and gives acceptable results for most people most of the time.

The disadvantages are that you are stuck with 300 dots per inch resolution, have few colors available, and are limited to the durability and inherent appearance of heat fused toner.

Thus, your final on-demand results can in no way directly compete against, say, full color, raised ink, hot stamped foil, extreme detail, thermography, embossing, or any of the other goodies that you can coax out of the traditional printing processes.

If superb quality is a must, then you can instead use the Laserwriter to prepare your original artwork for traditional printing. Note that you can work oversize and then photo reduce. This can stretch the 300 dots per inch limit as far as you want to go. You can do full color by printing separations as needed.

Outstanding pastels and halftones can be done using the internal Laserwriter halftone machinery. Just don't forget that the screen size changes as you enlarge or reduce the image. And, of course, you have an infinite range of type styles, shapes, and sizes, compared to the fixed height and fixed width of "old way" instant transfer lettering.

Let's look at an example. Figure 5 shows you a typical letterhead and some of the special effects you can easily get out of a Laserwriter. Once again, you can print this letterhead on demand as it sits, or else you can use the iamge as master artwork for traditional printing processes.

I did have to adjust the gray a tad for the brand new *Computer Shopper* printing press. If you don't like what you see here, just ask me for a free original.

Figure 6 gives you a Postscript listing of the letterhead

continued on page 171

```
/letterhead {save /snap exch def 100 45 {dup mul
exch dup mul add 1.0 exch sub} setscreen 40 720
translate  0 0 moveto 0 setlinewidth 533 0 rlineto
stroke newpath 0 0 moveto /Bookman-DemiItalic
findfont [34 0 0 34 0 0] makefont setfont /kernstuff
1 def (
Synergetics) gsave -13 0 translate {dup  /ggg exch
def /workstring ( ) def /char exch def workstring 0
char put /chardist workstring stringwidth pop def
workstring false charpath gsave 1 setgray 3
setlinewidth stroke grestore gsave 0.99 setgray fill
grestore 0.5 setlinewidth stroke  chardist kernstuff
add ggg 114 eq { 1 sub } if 0 translate  0 3 moveto}
forall grestore /Helvetica findfont [12 0 0 9 0 0]
makefont setfont 450 -10 moveto 0.15 0
((602) 428-4073) ashow 285 4 moveto 0.15 0
(746 First Street, Box 809, Thatcher AZ 85552)
ashow snap restore} def
letterhead showpage
```

Fig. 6 - The POSTSCRIPT letterhead listing.

Synergetics 746 First Street, Box 809, Thatcher AZ 85552 (602) 428-4073

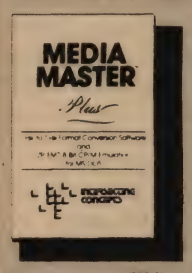
Fig. 5 - A custom letterhead design done entirely in POSTSCRIPT.

"MAKE YOUR IBM PC CP/M COMPATIBILE"

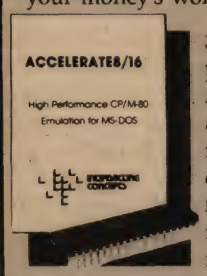
Intersecting Concepts Announces 3 Solutions To Solve Your Computer Incompatibility!

"But will it work on my computer?" *YES!* Finally, there are three *easy* ways to exchange information, transfer files, and run CP/M software on MS-DOS machines.

1. MEDIA MASTER™ is our direct disk-to-disk format conversion program. Already an accepted industry standard, this *$39.95** program uses simple screen prompts that lets you read, write and format up to 155 different 5 1/4" diskettes from CP/M, MS-DOS and PC-DOS operating systems. So if you work on a IBM PCompatible at the office, but use a CP/M computer at home, now you can easily transfer files that would otherwise be "foreign" to your computer's operating system. ***NEW! Version 4.0 for the IBM PC and compatibles is now 300% faster!***



2. MEDIA MASTER PLUS™ features our new *Media Master 4.0*, plus a new version of *ZP/EM*, our powerful CP/M-80 emulator program. The results of this two-program set are amazing! Now you can run 8-bit Z80 CP/M programs from your Osborne, Kaypro or Zenith computers on your IBM PC or compatible. For only $59.95, you can save your CP/M data *and* programs, and continue to get your money's worth out of your CP/M investment!



3. ACCELERATE 8/16™ dramatically improves the performance of *Media Master Plus* by tailoring the CP/M emulation around a user-installable NEC V20 microchip. Once installed, the NEC V20 chip will run your CP/M software 350% faster than *ZP/EM*! (MS-DOS programs run 15% faster). You can quickly command *Accelerate 8/16* to use 8080 software emulation, Z80 software emulation, or the V20's hardware 8080 mode to run your CP/M programs. This new version of *Accelerate 8/16* includes all the software packaged in *Media Master Plus*, V20 CP/M Emulation Software, and the NEC chip for only *$99.95!*

TO ORDER

To order *Media Master, Media Master Plus,* or *Accelerate 8/16,* call **800-628-2828, ext. 629.**

For additional product and upgrade information contact:

INTERSECTING CONCEPTS
4573 Heatherglen Ct.,
Moorpark, CA 93021
or call *805-529-5073.*

MasterCard VISA

Dealer inquiries invited. ** $99.95 for Dec Rainbow*

DISK DRIVES DISK DRIVES DISK DRIVES DISK DRIVES

FLOPPY DRIVES 5¼"

FUJITSU M2551A	HH, DS, DD	NEW	$ 89.95
TECMATE	HH, DS, DD	NEW	79.95
HI-TEC 548-5 OR TEC	HH, DS, DD	USED, TESTED	65.00
TEAC FD-55 GFV	1.2 MB, HH, DS	NEW	135.00
TANDON TM 55-4	HH, DS, QD	NEW	89.95
CDC 9409	FH, DS, DD	UNUSED, TESTED	65.00
WS FDD 211-5	FH, DS, DD	UNUSED, TESTED	65.00
TANDON TM 100-2	FH, DS, DD	NEW	75.00
IBM LOGO	FH, DS, DD	UNUSED, TESTED	75.00
CDC 9409 T	FH, DS, QD	UNUSED, TESTED	65.00
TANDON TM 100-4	FH, DS, QD	USED, TESTED	59.95
SHUGART SA 400 (35 tracks)	FH, SS, SD	UNUSED, TESTED	59.95
TEAC FD 50A	FH, SS, DD	USED, TESTED	59.95
APPLE DISK II (35 tracks)	FH, SS, SD	USED, TESTED	69.95

FLOPPY DRIVES 8"

TANDON 848-2E	HH, DS, DD	NEW	295.00
SHUGARY SA 800-1R	FH, SS, DD	USED, TESTED	65.00

HARD DRIVES 5¼"

MAXTOR XT1105	105 MB	FH	NEW	1695.00
MAXTOR XT1085	85 MB	FH	NEW	1295.00
MAXTOR XT1065	65 MB	FH	NEW	795.00
MICROPOLIS 1375 SCSI	175 MB	FH	NEW	2495.00
MICROPOLIS 1355 ESDI	170 MB	FH	NEW	2495.00
MICROPOLIS 1325	85 MB	FH	NEW	1195.00
MICROPOLIS 1323A	52 MB	FH	NEW	795.00
QUANTUM Q540	40 MB	FH	USED, TESTED	595.00
QUANTUM Q530	30 MB	FH	USED, TESTED	450.00
SEAGATE ST 225	25 MB	HH	NEW	275.00
SEAGATE ST 419	19 MB	FH	USED, TESTED	229.00
SEAGATE ST 412	12 MB	FH	USED, TESTED	195.00
SEAGATE ST 406	6 MB	FH	USED, TESTED	125.00

DISK DRIVES DISK DRIVES DISK DRIVES

DISK DRIVES DISK DRIVES DISK DRIVES DISK DRIVES

RODIME 203E	40 MB	FH	USED, TESTED	$ 450.00
RODIME 204	26 MB	FH	USED, TESTED	250.00
NEC 4255	26 MB	FH	USED, TESTED	225.00
DISCTRON 576	26 MB	FH	USED, TESTED	225.00
MICROSCIENCE H 612	12 MB	HH	NEW	175.00
CMI 6640	40 MB	FH	USED, TESTED	325.00
CMI 6640	40 MB	FH	AS IS	210.00
CMI 6426	26 MB	FH	USED, TESTED	245.00
CMI 6426	26 MB	FH	AS IS	159.00
TANDON 262	25 MB	HH	NEW (3½" on 5¼" chassis)	295.00

HARD DRIVES 8"

QUANTUM 2080	80 MB	NEW	1500.00
QUANTUM 2010	10 MB	NEW	175.00
MITSUBISHI 2860-1S	20-50 MB	NEW	995.00
SHUGART SA 4008	29 MB	UNUSED, TESTED	495.00

HARD DRIVE CONTROLLERS & CABLES

WESTERN DIGITAL WD 1002-WX2	for XT	105.00
NDC 5027	for XT	95.00
XEBEC (2 hard drives)	for AT	135.00
XEBEC (2 hard drives & floppy)	for AT	165.00

MONITORS

SAMSUNG, composite 12" phosphorus, 2 year guarantee	89.00

MISCELLANEOUS

12" ANTIGLARE SCREENS	1.95
JOYSTICKS FOR APPLE, COMMODORE, ATARI, COLECO, ETC.	9.95
HESMODEM FOR VIC 20 & COMMODORE 64	14.95
AT KEYBOARDS (price reduced)	39.95

TERMS: (1) Visa or Mastercard Welcome (2) CA Residents Add 6.5% Tax (3) C.O.D. Cashier Check or Money Order.

jb TECHNOLOGIES, INC. (818) 884-8500
7861 Alabama Ave. #17, Canoga Park, Ca 91304

DISK DRIVES DISK DRIVES DISK DRIVES

Ask The Guru
continued from page 170

This listing also shows why it is so important to use a Postscript speaking printer in the first place. It also dramatically drives home why you will want to work directly in the Postscript language, instead of using someone else's canned layout routines.

Check closely, and you will find lots of subtlety here. The company name is imaged using the charpath operator in a forall loop. Each letter is imaged three times. The first time, a fairly wide white outline is drawn. This automatically breaks the base hairline exactly when and where needed. Next, the letter is filled in with gray, using a custom and very dense halftone screen. Finally, the letter outline is traced in black. Some extra kerning is removed between the "r" and the "g" to force a more visually attractive spacing.

The street address and phone number are done by stretching Helvetica out so far that it picks up a totally different set of gothic vibes, bordering almost on a Copperplate or Steelplate image. Once again, your own custom Postscipt routines make this trivial.

I'll be happy to lay some free samples of this sort of thing on you.

What About Envelopes?

Funny you should ask that. I have yet to find any way to print decent or even acceptable envelopes with any laser printer. It may have to do with the double paper layer in an envelope giving charge transfer hassles, or with the lack of any uniform spacing between the top envelope surface and the image drum.

But, every once in a while, a beautiful envelope shows up in the mail that was obviously laser printed. And others assure me that there is no problem at all reliably printing laser envelopes. And lots of people are trying to sell horrendously overpriced envelope feeder mechanisms.

So, perhaps I don't know something about this, or else I am doing something obviously wrong.

My own approach right now is do the return address prepress artwork using the Laserwriter, and then have a local printer "crash print" the envelopes. Cost is well under a nickel an envelope if you buy your own quality envelopes from a paper distributor ahead of time and use a jiffy printing source.

What about the main address?

I have tried several methods. The one that works the best so far is to go back to my noisy old Diablo 630 and use a WPL routine to "semi-automate" the envelope feeding process. All you have to do is hold the envelope in place and flip the bail back and forth. The WPL routine and some time delays take care of the feeding and ejection. And it is considerably faster than a manual feed laser printer.

I once used continuous form "tip-in" envelopes, but they cost too much, took far too long to get, looked awful, had lousy glue, and often jammed.

Another thing I tried was to use transparent matte labels with the Laserwriter. The toner magically turns ultra black and very sharp on acetate stock.

You can quickly and quietly run a dozen of these at once and they do not look half bad. You can also get "classic laid" labels that are exactly the same color and finish as your envelopes.

Direct mail people tend to be superstitious, and I am no exception. I feel that an envelope with the address directly on it will have slightly higher odds of getting opened than mail with an obvious stick-on label.

Which may or may not be true.

Obviously, there is a big problem here. I suspect that future laser printers will have some sort of a flip-down envelope pressure roller that will solve these hassles once and for all. Meanwhile, how about cluing me in on what I am doing wrong?

Let me know if you want a free listing for the Diablo autofeeder. As usual, I'll be most happy to lay a bunch of free letterhead and envelope samples on you when you call or write.

And, once again, don't miss next month's *Computer Shopper*, no matter what. ●

NAMES & NUMBERS

Apple Computer
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010

Adobe Systems
1870 Embarcadero S120
Palo Alto CA 94303
(415) 852-0271

SAMS BOOKS
4300 West 62nd Street
Indianapolis, IN 46206
(800) 428-SAMS

NEW FROM
DON LANCASTER

APPLE RAMCARD DISASSEMBLY SCRIPT

Reveals the innermost secrets of Apple's new 1 meg memory card.

Includes full details on memory access and all formatting. Unlocked.

$24.50

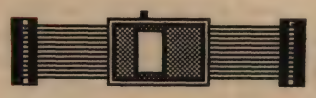
VISA/MC

SYNERGETICS
Box 809-CSR
Thatcher, AZ 85552
(602) 428-4073

The Connection is

64K Buffer $89

Copies, Pause, Bypass... These Buffers do it all! Metal case with LED status indicators. Parallel Mode. Multiple copies and multiple documents!

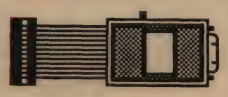


128K $99

Economical and compact. Connects easily between your computer and your printer. Comes with the necessary cabling built-in! 5 year warranty!

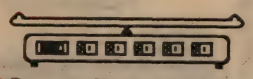
256K $199

Attractive and functional Intelligent Buffers come in either Serial or Parallel Modes with Pause and Copy features for multiple copies and documents! Touch-sensitive switches! 5 year warranty!

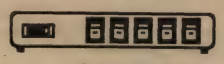


RS232 Converter

Allows you to convert RS232 signals to Standard Centronics Parallel. The converter is software-transparent and will run any baud rate up to 19,200! 5 year warranty! **$99**



$59



Power Control Centers with 5 power inputs and EMI/RFI protected, with or without swivel stand.

Metal-Case Switchboxes

Gold-plated contacts. Serial or Parallel Modes.

AB25-2	$45.00	AB36-2	$49.00
AB25-3	$51.00	AB36-3	$55.00
AB25-4	$57.00	AB36-4	$61.00
AB25-5	$68.00	AB25-X	$54.00

Call (918) 437-2600

No minimum. COD's accepted. Checks clear 2 weeks. 3% surcharge MC/VISA. Shipping and Handling added. Prepaids to: POB 690958 • Tulsa, OK 74169-0958

MaxTech

- FLOPPY DISK DRIVE -
SALES & REPAIR SERVICE

SPECIAL SALE

DRIVE MODEL	SIZE	1 - 3	4 +
Tandon TM848-2E ½ ht	8" DS/DD	$325	$300
Tandon TM 848-1E ½ ht	8" SS/DD	$199	$179
Tandon TM 848-2 ½ ht	8" DS/DD	$235	$215
Tandon TM 848-1 ½ ht	8" SS/DD	$149	$129
Tandon TM 100-2	5¼" DS/DD	$119	$109
Shugart SA801R	8" SS/DD	$189	$169
Shugart SA851	8" DS/DD	$275	$265
Pertec FD 410/510	8" SS/DD	$375	$325
Apple Hard Disk Sub System	5 meg	$375	$350

Come to JTS for all your repair needs. We offer quick turnaround at a reasonable price on any floppy found on the market.

WE SPECIALIZE IN PRODUCTS MADE BY PERTEC

EXPERT REPAIRS

BASE PRICE INCLUDES:
• First $20 in parts FREE • 30 Day Warranty
• 9 Diagnostic Tests • No Additional Labor Cost
• No charge for common components
• Drive exchange for drives too costly to repair

CALL FOR RMA# FOR ALL REPAIRS

REPAIRS
5¼" - $55
8" - $75
(Add $10 for Double Sided Drives)

JTS Independent Technical Service
21610 Lassen St., Suite 6, Chatsworth, CA 91311
818-882-7747

TI Announces

continued from page 92

terminals can be connected to a terminal concentrator; they can be placed in the work groups where the terminals are located, with a single Ethernet cable running back to the Business 1500.

Up to 128 terminals can be connected to the Business System 1500 using Ethernet and the terminal concentrators. The Business System 1500 will support TI's Model 931 video display terminal (VDT) as well as a new low-cost alternative, the Model 924 VDT. Both terminals are supported by the entire line of TI multi-user computer systems. In addition, TIPCs and the TI Business-Pro can be used as terminals in the Business System 1500 via terminal emulation; this provides further investment protection for TI's existing customer base.

Commercially-Tuned Software Enhances Business Applications

The Business System 1500 operating system, TI System V, is a commercially tuned version of AT&T System V. TI System V complies with the AT&T System V Interface Definition but has been enhanced with performance features, file management and I/O characteristics that help meet the needs of most business applications. A powerful COBOL compiler and integrated development tools create a highly productive programming environment. Although it is a full implementation of Unix System V, TI System V will seem familiar to customers of the current Business System product line because it contains many of the features and functionality of TI's DX10 and DNOS operating systems.

Among the enhancements contained in TI System V are: automatic balancing of the application program loads among the multiple processors; temporary record locking to coordinate concurrent file updates and protect data; automatic writing of memory I/O buffers to disk(s) as they are updated; and an improved file management system called T-ISAM. Ease-of-use features include an on-line help system and the TI Business Shell, an interface to UNIX that provides menus and prompt screens for command entry.

Initial languages supported by TI System V include COBOL, Pascal, C and 68000 assembly language. The COBOL development environment will include a highly integrated set of tools that dramatically increase programming productivity; these include a COBOL Compiler, a source level COBOL debugger, run-time environments, a forms designer and a sort/merge package.

The Business System 1500 will begin shipping in the third quarter of 1986. Quantity-one list price will range from $70,000 to $408,000.

For more information contact: Texas Instruments Incorporated, Data System Group, P.O. Box 809063, H-850, Dallas, TX 75380-9063, 1-800-527-3500.

Mention that you read about it in *Computer Shopper*. ●

GREAT SOFTWARE AT MODEST PRICES
Some samples from our library of over 500 disks for the IBM PC.

Desk Organizer. A great pop-up helper, phone dialer, note pad, calendar and calculator.
☐ 405 Deskmate—More than a sidekick ..$6
Communications
☐ 310 Qmodem-fast with windows.....$6
☐ 212, 334 Set up a BBS system $12
Assembler with tutorial.
☐ 10 Chasm, the CHeap ASseMbler.....$6
Draw on your computer screen.
☐ 344, 345 PC Key Draw (graphics req.) $12
Spreadsheet
☐ 199 PC-Calc-simpler than Lotus & effective $6
☐ 214, 215, 267, 268 Spreadsheet, database$24
Powerful database management programs
☐ 5 PC-File III-Labels, forms, letters, more $6
☐ 287, 288 File Express-reports generator $12
BASIC tutorial-A nice way to learn BASIC.
☐ 105 PC-Professor $6
Word Processing
☐ 294 Edit, small full-featured $6
☐ 78 PC-Write, popular and powerful $6
☐ 388 100 form letters on disk $6
☐ 194 PC-Read computes grade level of text $6
☐ 379 Wordstar utilities, color, ASCII converter $6
Artificial Intelligence Languages
☐ 405 Prolog $6
☐ 148 XLISP-experimental version of Lisp $6
☐ 398 ESIE, expert system generator ...$6
Japanese Art of paperfolding
☐ 408 Origami-graphics required $6
Games-The most interesting games on, or off, Earth.
☐ 293 Arcade Games (color graphics req.) $6
☐ 390 Flight and others (graphics req.) ..$6
☐ 354 PC Jr. games $6
☐ 292 Spacewars, great on Hercules card $6
☐ 476 Patrick's Best games (mono & color)$6
Recover lost files-File examine/repair utility (floppies only)
☐ 133 Ultra Utilities, similar to Norton's .$6
DOS Help and explanations for the new user.
☐ 254 PC DOS Help.....$6
☐ 403 Computer Tutor, learn PC-DOS $6
Housekeeping-Our favorite utilities.
☐ 273 Best Utilities $6
☐ 478 Hard disk utilities, WHERIS and more$6
Unprotect popular software
☐ 414 Disables copy protection $6
Financial
☐ 164 Cashtrac, checkbook, personal finances $6
☐ 462, 463 Simplified Business Bookkeeping $12
Typing tutor to train those digits to dance.
☐ 320 Touch Type $6
Something for programmers:
☐ 315 Small c compiler $6
☐ 424 Pascal compiler written in Turbo Pascal $6
Something for Lotus lovers:
☐ 304 Lotus 1-2-3 macros.....$6
☐ 301-303 Lotus financial and budget applications (3 disk set) $18
Genealogy - several to choose from:
☐ 90 Genealogy, keep tract of family tree $6
☐ 240 ft. etc., family tree organizer $6
For more software than you ever thought possible
☐ Catalog on disk (vol. 1-200).....$6
☐ Catalog on disk (vol. 201-400).....$6
☐ Catalog on disk (vol. 401-500).....$6
Most programs have documentation on disk and request a donation from satisfied users. Please add $2.00 plus .50 each additional disk. Texas residents add state sales tax.
Total Enclosed $ _____
☐ Check ☐ Visa ☐ MC
Card No. _____
Exp. date_____Signature _____
Name _____
Address _____
City _____State____ Zip_____
To order, call: (409)634-4520
STEVE'S SOFTWARE
111 Crosstimbers-Lufkin, TX 75901
PC-SIG DEALER

Applying The Atari

continued from page 163

York, for his valuable assistance in the creation of an Okidata version of this program. Thanks, Roy!

This version of ATASCII Lister will list to your Okidata any program listing. Graphics characters, and inverse video characters will appear in the listing as they appear on the screen. The program to be listed on the printer must first have been LISTed to disk or cassette (i.e. LIST "D:TEMP"). When you run ATASCII Lister, type C or D to the "CASSETTE or DISK" prompt. Disk users will then be asked for the name of the file to print. To continue the above example, you would type TEMP. Next you are asked for the density and for the characters per line (CPL). A density of one is suitable for most listings. You may want to experiment with different densities and CPL numbers.

Type Y for the "Will There Be More Than One Listing?" if you want the program to restart when you are done. The "LEFT MARGIN" prompt allows you to move the left margin over if desired. You can type zero to this prompt initially before you try other values.

Program Perfect Alert

Readers who have typed in REV 3.0 of Program Perfect will find that not all lines are deleted when the program ends. If you have REV 3.0, send me a note and REV 4.0 will be sent to you. The bug affects only the printed version of REV 3.0. My thanks to William Lutz of Mobile, Alabama for discovering this.

Digitized Rhythm Demonstration

I received a very enthusiastic response to the digitized sound samples included on the July 1986 diskette. In response to several requests, here's another (for those who just love to type!). It's listed under the "Digitized Rhythm Demonstration." The program will take several minutes to set up when run and will ask you for a speed. Enter a number from zero to nine. Five is normal speed. The screen will go blank and your Atari will play a digitized drum pattern at the speed you selected. To change to another speed, press RESET and RUN the program again (the program will require no setup time the second time it is run as long as the computer has not been turned off).

Next Month

A number of wonderful newsletters were in the mail this month but unfortunately I have run out of space. Next month we'll take a look at The Stellar Winds, P.A.C.U.S., G.L.I.T.C.H. and other newsletters. We'll also type-in and learn to use another mega-program: a multi-featured forms generator featuring an 80-column by 48-line scrolling screen. Stay tuned.

Readers' questions, comments and contributions are welcome. Please enclose a self-addressed, stamped envelope (SASE) for a personal reply. Due to volume of letters received, only a selected number of personal responses can be given each month.

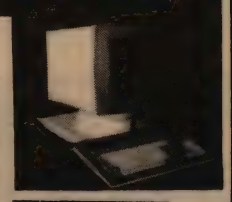
A diskette of this month's programs is available from the author for $7.00, postpaid. Please make checks payable to "Jeff Brenner" and specify your disk drive model.

"Program Perfect" is a utility used to check for typing errors while entering programs from this column. Readers may send $5.00 for a diskette or a SASE for a listing of this program.

Address all correspondence to: Jeff Brenner, "Applying The Atari 10/86", c/o *Computer Shopper*, P.O. Box F, Titusville, FL 32781-9990 ●

TERMINALS

Quality Used Terminals Tested and with 30 days warranty



TELEVIDEO		LEAR-SIEGLER	
910/920	$149	ADM-12	$149
925	249	ADM-3	99
925E	349		
950	349		
DEC/C.ITOH		**WYSE**	
CIT 101	$349	50	$299
CIT 101e	399	75	375

MACINTOSH

External Hard Disk Controller for Macintosh or Mac-Plus **$129**

★ Supports HFS
★ Supports a wide variety of disk drive types from 5 MB to 43 MB
★ Runs on either printer or modem port
★ Comes with operating software and instructions
★ 90 days parts and labor warranty
★ Requires external case, power supply and fan.
★ Full set of schematics included.
★ Board is fully assembled and tested. 110 V FAN - $8.

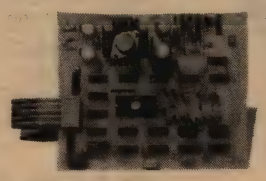
All items shipped U.P.S. Freight Collect unless instructed otherwise. CA residents add 7% sales tax. To order, send check or money order or:

Credit Card Orders Call
(800) 821-5226 ext. 440
or (408) 559-6459

Mastercard and Visa accepted. This is only a partial listing. For further inquires call: (408) 559-6459

R.A. L. CONSULTING
Electronics Marketing
14805 Cole Drive
San Jose, CA 95124

MS-DOS, CP/M EPROM PROGRAMMING SYSTEM

2708		2732/A
2758		2764/A
2716		27128/A
2516		27256
2532*		27512
2564*		27CXXX
68764*		2864A
2816A		8751UC*

- FAST PROGRAMMING ALGORITHM - STAND ALONE UNIT USES NO BACKPLANE SLOTS
- USES 24 VOLT XFMR FOR POWER - ALL SUPPLIES ON BOARD - EASY INSTALLATION
- PROGRAMS 26,25,21 AND 12.5 VOLT E/EEPROMS - NO PERSONALITY MODULES TO BUY

*SOCKET ADAPTER REQUIRED FOR DEVICES MARKED WITH ASTERISKS(*) (ADAPTER DIAGRAMS INCLUDED)

CONNECTS TO ANY PARALLEL PRINTER INTERFACE

REQUIRES 8 OUTPUT DATA BITS AND ONE INPUT DATA BIT (PRINTER BUSY LINE).

CONTROL PROGRAM COMMANDS

- PROGRAM EPROM(S) FROM DISK - SAVE EPROM(S) TO DISK - READ DISK FILE INTO RAM
- PROGRAM EPROM(S) FROM RAM - READ EPROM(S) INTO RAM - COMPARE EPROM W/RAM
- VERIFY EPROM IS ERASED - COPY EPROM - MONITOR MODE

MONITOR HAS 11 SUB COMMANDS:FILL,DUMP,XFER,EXAM,MODIFY,BIAS,PRGRM,VERIFY,CKSUM, ETC

ASSEMBLED & TESTED UNIT WITH COMPLETE DOCUMENTATION AND SOFTWARE ON DISKETTE ——> $199
COMPLETE PARTS KIT, SOFTWARE AND DOC. - $179 / BAREBOARD, SOFTWARE & DOC. - $69
SOFTWARE AVAILABLE ON 8 & 5 1/4 DISK FOR IBM, KAYPRO AND MOST OTHER FORMATS

TO ORDER SEND CHECK, MONEY ORDER, WRITE OR CALL
ANDRATECH
P.O. BOX 222
MILFORD, OHIO 45150
(513) 752-7218

CALL OR WRITE FOR MORE INFORMATION -- ADD $4.00 FOR SHIPPING
OHIO RES. ADD 5.5% TAX -- VISA/M.C. ACCEPTED -- $3.00 FOR COD

Apple CP/M continued from page 83

features. There is, for example, an "Undo" command that allows you to retract your last command. If I may add editorially, "Undo" has saved my tail more than once.

Programming Languages

Computers were originally conceived as tools of computation rather than tools of text processing. To use your computer as a computational device, you must know some programming language. Knowing how to program is absolutely not any kind of prerequisite for being a skilled computer user. Contrary to what is being purveyed by some of our educators, computer literacy does not mean the ability to program in BASIC, Pascal, or anything else. It is a useful and interesting skill to be able to write a program. Writing a program is like intellectual calisthenics, it enables the user to exercise some of his little used gray matter. It is very satisfying to write a program that works as intended; it gives the feeling of accomplishment and mastery over the machine.

The question then is if I want to program, what language should I use? Probably no other question in computing raises as much controversy as that pertaining to the pros and cons of different programming languages. Since the purpose of this column is not to re-open this software debate, I will point out the advantages and disadvantages of three of the most common languages used today on Apple-CP/M.

First, there is MBASIC from Microsoft. MBASIC is a first cousin of the Applesoft that resides in ROM (read only memory) deep inside your Apple. Unlike ROM based Applesoft, MBASIC is a disk based program that must be booted up before using. Like Applesoft, MBASIC is an interpreted BASIC.

Interpreted means that each line of code is converted into machine code as it executes. This means a line of code is converted once if it is used once, and it gets converted 1000 times if it is in a loop 1000 times. It sounds inefficient, and it is from a speed standpoint. Interpreted languages are relatively efficient from a storage standpoint. Compiled languages, the other form that programming languages come in, take up more room in storage, but usually execute faster because they are compiled into machine code only once and that is it.

What makes having MBASIC so valuable, is that there are many useful programs around (many public domain) that require that you have it to be able to run them. Remember, it is not Applesoft, it is not ROM, MBASIC has to be loaded from disk to be used or to run a program written in it. It also means that you have to go out and buy it separately, although it is sometimes bundled with some systems.

Another common BASIC used Apple-CP/M is a CBASIC from Digital Research (the folks who brought you CP/M). CBASIC is peculiar in that it is not really an interpreter, nor is it a full compiler. When you write CBASIC program, the source has a ".BAS" extension. You then run the source file through what is called the "compiler" that instead of generating compiled code generates something called "intermediate code" and the file generated has the ".INT" extension. To run intermediate code requires something called the "Run-Time Interpreter." Unlike a fully compiled program that can run straight from the CP/M A> prompt, a CBASIC program must have the Run-Time Interpreter to run a CBASIC program.

CBASIC is a powerful BASIC that dates back to the earliest days of microcomputing. Like MBASIC, there are many useful programs written in CBASIC that require CBASIC to run. Again, it has to be obtained separately or be bundled with your system. Since Digital Research has effectively abandoned most of their 8-bit products, CBASIC may become more and more difficult to find legally. Unless it becomes public domain, it is either a bootleg copy of CBASIC or no copy of CBASIC.

If you are interested in CBASIC there is one more im-

continued on page 180

Point. Click. $ave!

Macintosh™ XL. A powerful computer with up to a full megabyte of RAM, 40mb hard disk, 400K internal disk drive, larger screen and keyboard complete with numeric keypad. And, powerful as it is it's as easy to run as any other Macintosh and a whole lot easier to afford!

AS LOW AS **$995**

At this price configured with 512K RAM, 400 K Internal Drive, MacWorks XL. *Reconditioned — Warranted*

RAM	DRIVE	PRICE
512K	400K Internal	995.00
1 mb	400K Internal	1295.00
1 mb	5 mb ProFile	1795.00
1 mb	10 mb Internal	1995.00
1 mb	20 mb Internal	2195.00
1 mb	10 mb Internal	2650.00 *New*
Lisa Office System (7/7)		295.00

CHOOSE YOUR OWN CONFIGURATION...

SILENTYPE PRINTER

DON'T LET THE PRICE FOOL YOU

$19.95

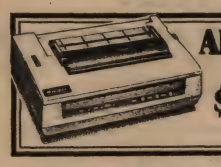
- Quiet
- Supports graphics
- Easy to install

APPLE® MODEM

- 1200 Baud
- Hayes compatible
- New

$195

APPLE DMP PRINTER



$199

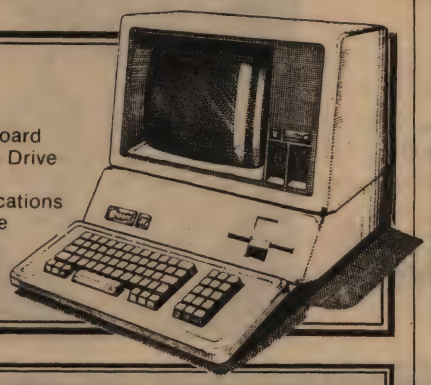
- Parallel Printer
- Dot Matrix
- Great Workhorse

APPLE II Plus

COMPLETE SYSTEM —
- Computer
- Monitor
- Disk Drive

Reconditioned Warranted **$499**

APPLE ///

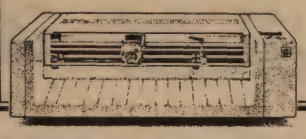


- 256K - Easy-to-use keyboard
- Computer, Monitor, Disk Drive
- 4 Expansion slots
- Great for business applications
- Lots of software available

Reconditioned - Warranted **$749**

APPLE - HP Compatible

COLOR PLOTTER



- Graphs, Charts, More
- Four color heads
- Software selectable
- Connects to RS232
- Up to 11x17

$195

Sold Originally for $999

IMAGEWRITER™ PRINTER

$345

- Dot Matrix
- Serial Printer
- Supports Graphics
- Programable

SELECTED APPLE /// SOFTWARE— PRODUCTS

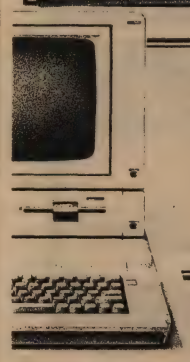
ALL IN STOCK READY TO SHIP!

GREAT CHRISTMAS GIFT!!
TITAN /// plus IIe $359 Emulates IIe on Apple ///
Suggest List $499.00

Item	Sugg List	Our Price
Accounting (GL/AP/AR)	1485.00	195.00
SoftCard (CP/M)	450.00	79.00
Pascal	250.00	49.00
Business Basic	125.00	49.00
/// Easy Pieces	245.00	135.00
AppleWriter 2.0	275.00	75.00

Over 200 Products for the Apple /// in Stock

HARD DISK DRIVES



• *Apple II* • *Apple ///* • *Macintosh™*

Quark® 10mb	$995	works on All Apples
Quark 20mb	$1195	works on All Apples
ProFile™ 5mb	$595	works on Apple II and ///

ProFiles are reconditioned - Each comes with a 30 day warranty.

No Sales Tax on Out-of-State Sales

SEE YOUR LOCAL COMPUTER DEALER OR CALL...

Specializing in Remarketed and Obsolete Apple Products...

SUN SYSTEMS REMARKETING
P.O. Box 4059 Logan, UT 84321

ORDERLINE -
1-800-821-3221
For a complete lisiting of products CALL FOR OUR LATEST CATALOG

801-752-7631
Questions — Service

VISA MasterCard

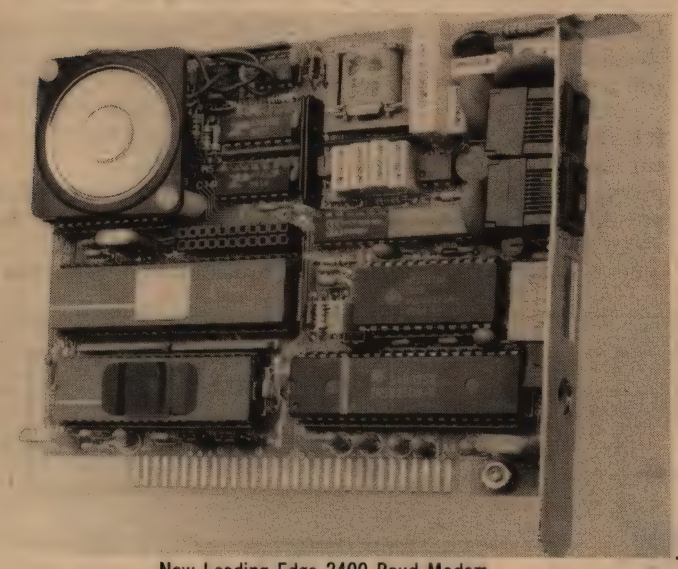
Apple and the Apple logo are registered trademarks of Apple Computer Inc. Macintosh is a trademark of Mcintosh Laboratory, Inc.

FULL SERVICE AND SUPPORT

We are not liquidators...

Introduce yourself to a fresh new concept called *Remarketing*. Sun Systems is the nation's largest support center for obsolete Apple products. For questions, service and support call Sun Systems. Each product we sell carries a satisfaction guarantee. We are not satisfied until you are!

Leading Edge Announces 2400 Baud Modem for $289



New Leading Edge 2400 Baud Modem

Leading Edge, one of the country's largest marketers of IBM-compatible personal computers, has announced a Hayes-compatible 2400 baud modem priced at $289. The addition to the Leading Edge "L" series works twice as fast as most modems, and is priced several hundred dollars below any comparable unit.

"Until now," said Leading Edge Hardware Products, Inc., "surveys show that most home computers have been used primarily to play games and for word processing." Our "L" line of modems opens up a whole new universe for computer users. Now, for the price of a piece of software, a computer user will be able to talk to other PC users and to access the 2,500 on-line data bases in this country."

Leading Edge introduced its first modem in the "L" series this summer, a 1200 baud unit priced at $149.95. The company has said the tremendous market reception of that initial unit prompted Leading Edge to quickly offer the more sophisticated version.

Leading Edge revolutionized the personal computer market two years ago with the introduction of its IBM-compatible Model D, now priced at $1,495 with Leading Edge Word Processing and a 15 month warranty, offering high performance at a competitive price. "That made personal computers available to millions of people who previously couldn't afford them," said Wendy Ziner. "We believe our "L" series modems will do the same thing."

Both "L" model modems plug easily into the Model D, the IBM PC, XT, AT and other popular IBM-compatibles in full or half-size slots. They feature COM1 through COM4 addressability, auto-dialing and auto-answering, and are compatible with most communications software packages. The newest model operates at 300, 1200 or 2400 bps.

Both the 1200 and 1400 "L" modems will be available through most dealers.

Mention that you read about it in *Computer Shopper*.

For more information contact: Leading Edge Hardware Products, Inc., 225 Turnpike St., Canton, MA 02021 (617) 828-8150. ●

IBM — Kaypro — Osborne — Ampro — SB-180

CONNECTED!

When it's time to quit playing with your modem and get down to the serious business of data communications, it's time to upgrade to MEX, the Modem EXecutive.

MEX-PC — Version 1.65 is the most powerful and versatile modem software ever designed for MS-DOS, CP/M and TurboDOS computers. Protocols: XMODEM, Kermit, CompuServe A, Modem7 and Ymodem batch. Menu or command-driven. Complete script language lets you write your own applications, including custom user interfaces for personal or business environments and fully automated log-ons, uploads, downloads and log-offs. Fully indexed, 250-page, ring-bound User's Guide & tutorial. **$59.95***

MEXPACK — All the features of MEX-PC, plus: *REMOTE* (run your office PC from home or vice versa) and *TERMINAL EMULATION* that allows you to communicate over phone lines with mainframes that use ADM, DEC VT52/100, Televideo 925 or Data General Dasher terminals. **$99.95***

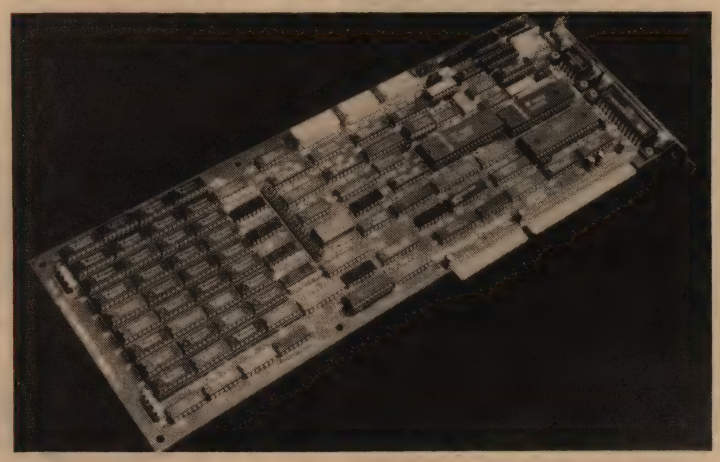
To order, call: 1-800-NITEOWL

(In Wisconsin: 414-563-4013)

*Plus $5 shipping & handling. Wis residents add 5% sales tax.

AST Research Premium Expanded Memory/Multifunction Board For PC/AT

AST Research Inc. has announced its Advantage Premium™ expanded memory /multifunction board for use with the new 8 megahertz PC/AT, existing AT and compatibles. The new product will also be featured at a 12-city tour featuring AST's Premium Series products.



Advantage Premium delivers all the functions of AST's industry-standard Advantage enhancement board, then adds advanced multiple-applications handling capability to turn the AT into a powerful office-productivity tool. Like the company's new SixPakPremium board for the IBM PC and PC/XT, Advantage Premium operates under AST's Enhanced Expanded Memory Specification (EEMS). This increases the At's addressable memory to a full 2 megabytes while providing 100% compatibility with the L-I-M EMS specification. That expanded memory is combined with DESQview multitasking/windowing software, allowing AT users to run up to nine PC DOS applications concurrently.

Unlike other multitasking/windowing environments for the AT, Advantage Premium's DESQview requires no special versions of applications packages—it handles more than 200 of the most popular off the shelf programs. "Advantage Premium is aimed at the new generation of AT users who want complete multitasking formula for IBM's 16-bit machine—and want it now," said Tony Paradiso, Advantage Premium product director. "With our new board they can run Lotus 1-2-3, Symphony 1.1, dBASE II/III or WordStar packages already available on the market. Whether they're buying an AT for the first time or upgrading an existing system, users get real productivity gains."

Because Advantage Premium is fully compatible with the Lotus/Intel/Microsoft (LIM) Expanded Memory Specification (EMS), users can run EMS programs as well. Advantage Premium also includes AST's Split Memory Addressing, which lets users round out

continued on page 178

10 MEG HD TANDON FULL HT $145 $279 W/CONTROLLER

for PCjr. DISK DRIVES WITH CONTROLLER $239

ATR 8000 W/CPM $350 HARD DISK $549

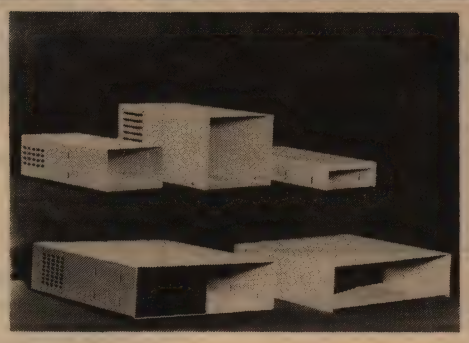
FOR ATARI ST COMPUTERS **IB DRIVE** READS & WRITES PC 5¼" FORMAT

5¼" DISK DRIVE CASES w/Power

SINGLE ½ Ht Cases w/Power	$49.95
DUAL ½ Ht Cases w/Power	$59.95
HARD DISK Single w/Power	$119.95
SINGLE ½ Ht. Case Only	$19.95
DUAL ½ Ht. Case Only	$21.95

5¼" DISK DRIVE CASES W/POWER SUPPLIES

- Cases accommodate all standard 5¼" drives.
- New chip resistant finish.
- Over current and over voltage protection.
- Dealers Wanted.
- Call or write for quantity discounts.



Dual Power Supplies

Horizontal – 12x12½	$69.95
Vertical – 7x12x6	$69.95
Single Horiz. P/S – 6x12x3½	$49.95
2-Drive Cable	$21.00
3-Drive Cable	$32.00
Dual Case, Horiz. or Vert. (W/O P/S)	$29.95
Single Case, Horiz. (w/o P/S)	$21.95

PRICES MAY BE LOWER AT TIME OF PUBLICATION
TERMS: Personal checks allow 14 days, COD, MO., Certified Checks . . . Credit Cards and 3.5%
Shipping and handling: $2.00 plus current UPS or Parcel Post rates.

24 HOUR BBS # 503-292-1321

IB COMPUTERS 503-297-8425
1519 S.W. Marlow, Portland, OR 97225

PLUG-IN COMPATIBLE **ATARI ST** PROVIDES LINK TO PC COMPUTERS! EASY TRANSFER OF FILES AS DRIVE B: JUST INSERT 5¼" DISKETTE AND RUN. FORMATS TOO! $239.00 COMPLETE. CABLE ONLY $35.

GODFATHER'S used computer SYNDICATE

. . . . Overstocks • Closeouts • Only Super Bargains

. . . . For an offer you can't refuse call (305) 774-1111

THE COMPATIBLE SHOPPER

(A Survival Guide to the Computer Shopper)

As I was searching for a topic for this month's letter, my wife was absent-mindedly leafing through the pages of September's Computer Shopper.

"LOOK, AN XT-COMPATIBLE FOR ONLY $250!!! AND A REAL IBM-XT FOR $1500!!" she exclaimed. Being a bargain-hunter at heart (her motto is "born to shop"), she was so excited that I hesitated to burst her bubble. "Read the fine print," I muttered, not bothering to explain the myriad of reasons behind such "too-good-to-be-true" prices. Then I realized I'd just stumbled across a topic for this column.

Our conversation went something like this:

WHAT'S THE DIFFERENCE, THEY ALL SAY "COMPATIBLE"?

Full software and hardware compatibility means that all software and hardware components are interchangeable and work the same in the original or in the compatible machine. True 100% compatible computers are counterfeits, so the trick is to find a computer that's functionally equivalent without being an illegal copy. How much compatibility you need depends on what you are using now. No problem . . . just ask the manufacturer if your software runs on his machine (if you can talk to the manufacturer — and if he has tested it). But how DO you insure future compatibility when you need hardware or software enhancements? You choose a stable company that gets consistently high ratings for compatibility and one that can provide future support. For example, although industry experts have always ranked Columbia a top compatible, we recently discovered that it was not EGA compatible. So we changed the ROMBIOS in version 4.36 for existing owners' EGA needs. IBM also enhances their existing products from time to time. Many other large manufacturers who claimed full compatibility for their products, and then had them fail in the marketplace, are dropping some models because they are not as compatible as their newer ones.

CAN A COMPANY ADVERTISE A COMPUTER THAT IS AN ILLEGAL COPY?

Sure, it's done all the time by many vendors. Many computer products that come in from overseas have the ROMS removed before shipment so they can pass customs. IBM and others are now attacking the source of the supply instead of just the vendors. According to a recent article in *Infoworld,* "IBM is regularly testing PC clones for infringement of IBM's copyright on the BIOS software for its machine." If you purchase one of these questionable clones, you may own an orphan when legal problems cause the manufacturer to disappear. Columbia's ROMBIOS was designed independent from IBM and has never been challenged.

IF IT HAS A WARRANTY, IT MUST BE RELIABLE, RIGHT?

The warranty is important, but reliability involves several factors. First, it has to be a well engineered product that has been subjected to extensive EMI, heat, and high voltage stress tests to insure that the unit will last. It must also meet rigid FCC and UL requirements. (I was nearly electrocuted while testing an imported computer for FCC approval — we found the power supply was wired backwards. We rejected that manufacturer!) Each individual component must be thoroughly burned in for at least 72 hours to prevent 25¢ parts from causing $250 repairs. Some manufacturers only do sample testing, so some defective computers do get shipped. The most important reliability consideration — consistent performance — can only be judged by the computer's track record. What do the experts say? How many have been sold? Are the owners satisfied? Is there a service contract? If you can't get satisfactory answers to these questions, then beware.

WELL, WHAT ABOUT THE WARRANTY?

Warranties show the good intentions of the manufacturer. Few manufacturers plan to abandon their warranty, but lack of adequate planning and resources sometimes hinders performance. How many claims could be handled by a business offering a two-year parts, labor, and satisfaction warranty . . . from a company that started last week "building" computers in their garage? FCC and copyright violations can also hurt your chances of using your warranty since legal problems weaken the company. On the other hand, if a company enjoys a good service reputation along with a reliable product, you can be confident they will honor the warranty.

WHAT SHOULD I LOOK FOR IN EXPANDIBILITY?

We may soon have 500 megabyte databases in the form of laser disks . . . but only if your computer can support the necessary hardware and operating systems. The number of expansion slots, size of the power supply, speed, number of drive openings, and memory capacity are also important factors if you want to add something that wasn't envisioned when the machine was originally designed. For example, when 8087 math coprocessors were selling for $400, some manufacturers did not include this socket. Although networking capabilities are still not widely needed, this is just one example of functions that may be excluded if your computer is not appropriately designed. Many manufacturers still do not include space for at least four drive-size devices or the power to run them. As you can see, it is very important for a manufacturer to plan for the implementation of new technology after the purchase.

ISN'T IT IMPORTANT TO BUY A NAME BRAND?

It is really important to compare equivalent configurations. Make a list of the features that you want. Ideally, you should be able to price the same combinations of equipment from two or three carefully selected manufacturers. In reality, this is possible but difficult, because you cannot always tell what they have left out. For example, if MS-DOS is included, do you assume that it comes with Basic and all the manuals? What you DON'T want to do is assemble a conglomeration of parts from 10 different advertisers, chosen strictly by lowest prices. Avoiding such dubious bargains will save you time and money in the long run. A case in point . . . today we received a distress call from a Columbia owner whose bargain hard drive (purchased from another dealer) quit working just after its two-week (and "too weak") warranty expired. He ended up throwing the drive away and purchasing a proven drive from us (with a minimum 90-day warranty!).

IT LOOKS LIKE THE COLUMBIA IS A GREAT VALUE FOR THE PRICE. WHAT ELSE CAN YOU TELL ME ABOUT IT?

The fact that there are 70,000 Columbia owners says a lot about its popularity and reputation. They are also well supported by the Columbia Owners Group. COG is currently sending newsletters to 15,000 registered owners and plans to reach the others by word of mouth. Fully documented versions of DOS and BASIC, as well as a readable operations manual, are included in the purchase price. We have designed our latest Columbias so you can start using the computer immediately without having to learn DOS. We have done this by not only loading the hard drive with all the software, but by setting it up with a menu system that bypasses DOS commands. When you get ready to learn DOS, we not only have DOS tutorials but a unique on-line help feature as well. Just type "HELP" from DOS and your questions will be answered! (See the next few pages for many other Columbia features). And don't forget the seller's reputation. The Godfather has been around a few years and plans to protect his name. You can depend on Godfather's to stand behind its products.

After completing my short course in compatible shopping, Mrs. Godfather is sold on Columbia. She thinks you'll agree . . . IT'S AN OFFER THE DISCRIMINATING "COMPATIBLE SHOPPER" CAN'T REFUSE!!

WE ONLY BUY USED EQUIPMENT . . . UNLESS NEW COSTS LESS

We think we've got some clever BUMPER STICKERS!

Just send a stamped, self-addressed business envelope and we'll send you some.

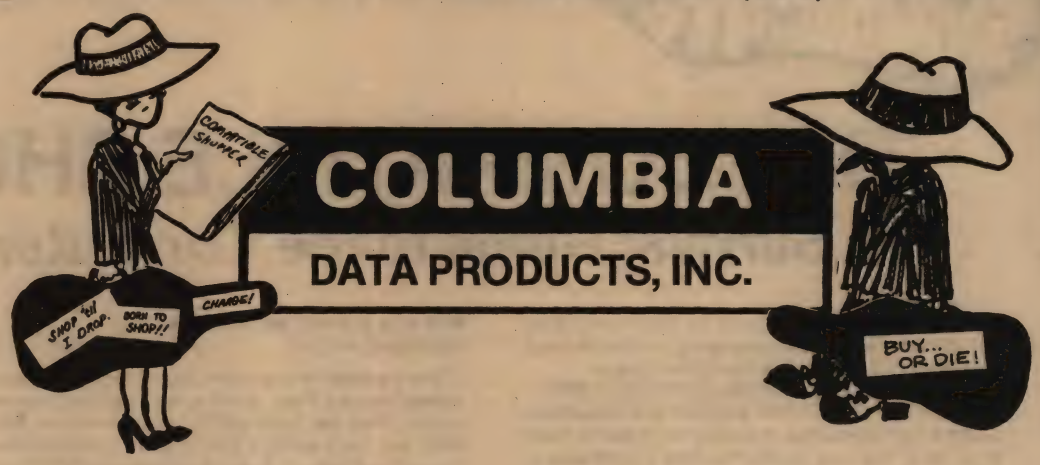
The Godfather

P.O. BOX 3037 • 1154 W. HIGHWAY 436 • FOREST CITY, FL 32714 • (305)774-1111

GODFATHER'S used computer SYNDICATE

. . . . Overstocks • Closeouts • Only Super Bargains

. . . . For an offer you can't refuse call (305) 774-1111

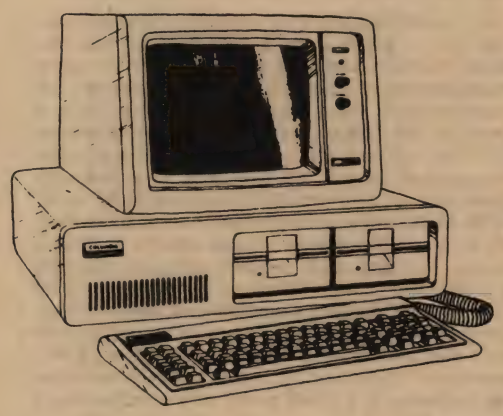


COLUMBIA

DATA PRODUCTS, INC.

THE COMPATIBLE SHOPPER BUYS THE COLUMBIA

. . . For Obvious Reasons!!



SPECIAL OFFER — COLUMBIA MPC 1600 WITH 10 MEG FULL HEIGHT DRIVE *PLUS* 640K MEMORY — ONLY $1299 (PLUS $35 SHIPPING-UPS ground only)

NEW! WITH 90-DAY WARRANTY!

SPECIAL OFFER — COLUMBIA MPC 1600 WITH 20 MEG HALF HEIGHT DRIVE *PLUS* 640K MEMORY — ONLY $1599 (PLUS $35 SHIPPING-UPS ground only)

HARDWARE

• 640K RAM expandable to 1 Megabyte • 360K double-sided, double-density floppy drive • HD power supply that supports a 20 MEG w/tape back-up • Keytronics-style keyboard with lights • Two serial RS-232's & parallel port • Eight full-length IBM® -compatible expansion slots (compared to IBM's six) • 16-color CGA adaptor • **FCC & UL APPROVED!**

SOFTWARE

Lots of other machines can match the hardware features (without matching the price), but the main reason you want the Columbia is for its complete compatibility and a record of proven reliability. Virtually every software program and peripheral that function on an IBM PC work on the Columbia. The heart of each Columbia is the 8088® microprocessor, just as it's the heart of an IBM PC. And every Columbia is factory-configured to run MS™-DOS 2.11 and GW™-BASIC 2.0 (BASICA), much the same as the IBM PC operates PC-DOS and BASICA. The result is not just a degree of compatibility but the true standard . . . Columbia!! Your Columbia comes with a huge bundle of software . . . 16 FREE programs WORTH OVER $3000! It also comes with 5.7 MEG of software ALREADY INSTALLED on your hard drive PLUS A MENU! This means you don't have to learn MS-DOS before you can run your Columbia!!

These programs include: • MS-DOS 2.11 • MS-DOS tutorial • BasicA 2.0 (this runs all the IBM GW BASIC programs we tried) • Perfect Writer • Perfect Writer tutorial • Perfect Speller (50,000 words) • Perfect Calc spreadsheet • Perfect Calc tutorial • Perfect Filer DBMS • Fast Graphs (color) • Perfect Link (modem program) • Home Accountant Plus • Columbia MPC tutorial • TIM IV relational data base • Space Commanders • Hardware diagnostics •

Columbia also runs all the popular IBM programs such as Lotus 1-2-3, Symphony, dBASE III, Visacalc, Wordstar, Flight Simulator II, Microsoft Word, and many, many more!

WARRANTY

We offer a 90-day parts and labor warranty with our product. We also service the Columbia out of warranty (should you ever need it); in addition, ITT SERVCOM services out-of-warranty machines nationwide.

We hope you are convinced that the Columbia is the best IBM-compatible available . . . and that **GODFATHER'S** is offering it for the best price (for any comparable product) anywhere!

COG MEMBERSHIP

When you purchase your Columbia, you will undoubtedly want to immediately join the **Columbia Owners Group** (COG). Some of the advantages of membership are: • Quarterly newsletter to keep you informed of latest information on computer "tips and tricks," available upgrades and/or additional uses for existing hardware/software, a "Contributor's Corner" for suggestions from other group members, etc. • Special pricing on items from Columbia Data Products, Inc. directly through the Columbia Owners Group •

Specifications subject to change without notice.

IBM is a registered trademark of International Business Machines Corporation. 8088 is a registered trademark of the Intel Corporation. MS-DOS and GW-BASIC are trademarks of Microsoft Corporation.

WE ONLY BUY USED EQUIPMENT . . . UNLESS NEW COSTS LESS

LET US KNOW IF YOU ARE INTERESTED IN JOINING OUR FAMILY TO GET A PIECE OF THE ACTION. PLEASE WRITE US IF YOU HAVE LARGE OR SMALL QUANTITIES OF NEW OR USED EQUIPMENT EITHER TO BUY, SELL, OR TRADE, OR WE CAN ADVERTISE & SELL IT FOR YOU WITHOUT IMPLICATING YOU!! (HEH! HEH!)

TERMS: CASH, CERTIFIED CHECK, MONEY ORDER OR BANK WIRE • MASTERCARD ADD 4% AS PRICES ARE DISCOUNTED 4% FOR CASH • ADD $35 SHIPPING & HANDLING FOR COLUMBIA MPC UNIT (UPS GROUND ONLY) • INSTORE SALES LIMITED TO SUFFICIENT STOCK.

P.O. BOX 3037 • 1154 W. HIGHWAY 436 • FOREST CITY, FL 32714 • (305)774-1111

GODFATHER'S used computer SYNDICATE

.... Overstocks • Closeouts • Only Super Bargains

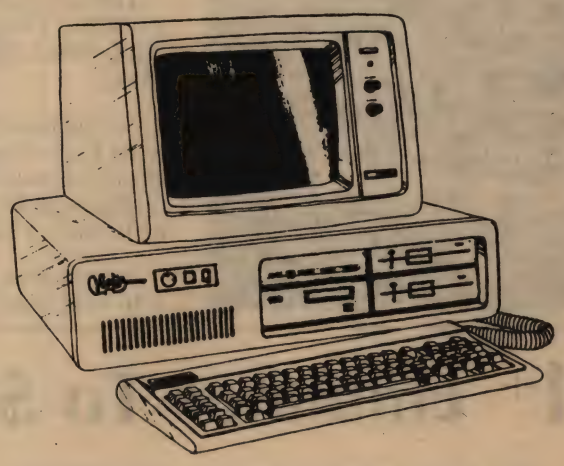
.... For an offer you can't refuse call (305) 774-1111

FCC Approved Now Shipping!

THE VIOLIN-ATC!!

IBM-AT COMPATIBLE *ONLY BETTER*

New! With 180 Day Warranty



$1995

WITH 20 MEG!

AND BUNDLED SOFTWARE WITH DOS

COMPARE GODFATHER'S HARDWARE AND SOFTWARE PRICES WITH THE COMPETITION

	VIOLIN-ATC	COLUMBIA ATC-6000	IBM AT	YOUR CLONE
20 Meg Hard Drive Included	YES	YES	?	?
# of Expansion Slots	12	12	8	?
# of ½ Height Drive or Tape Slots	5	5	4	?
# of Drive Slots in Front of Case	4	4	2	?
Clock Speed (mz)	6 or 8	6 or 8	?	?
Memory Included as Standard	512K	512K	?	?
Max Memory on Motherboard	1024K	1024K	?	?
Power Supply Watts	230	230	192	?
Manual Reset Switch	YES	YES	NO	?
AT Style Keyboard Included	YES	YES	YES	?
Parallel and Serial Ports Included	YES	YES	?	?
Runs UNIX	YES	YES	YES	?
EGA Card Compatible	YES	YES	YES	?
80287 Math Coprocessor Slot	YES	YES	YES	?
Clock Calendar	YES	YES	YES	?
2 Hard/2 Floppy Controller Included	YES	YES	YES	?
1.2 Meg or 360K Floppy Included	YES	YES	1.2	?
FCC Approved	YES	YES	YES	?
MS-DOS 3.2 Included	YES	YES	NO	?
Basic & Basica Included	YES	YES	NO	?
Huge Bundle of Software Included**	YES	YES	NO	?
Godfather's Factory Service	YES!	YES!	NO!	NO!
PRICE	$1995	$ _____	$ ____	$ ____

***Huge Bundle is available separately (without MS-DOS) for $300 for other clones!!*

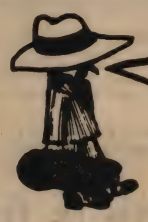
Few machines can match the hardware features of the VIOLIN-ATC, but they may try to do so in the future. To stay ahead of the rest we are including lots of software to this long list as it becomes available to us. Your hard drive will come already loaded and tested with most of this software, configured with an easy to use menu system so you will not have to learn MS-DOS as soon as you start. We have tested a large number of software packages and have found that the VIOLIN-ATC runs all the same software as the IBM-AT that we tested.

THESE PROGRAMS ARE INCLUDED: MS-DOS 3.2 • MS-DOS tutorial • BASIC & BASICA • TIM-IV relational data base • Perfect Filer DBMS • Perfect Writer • Perfect Writer tutorial • Perfect Speller (50,000 words) • Perfect Calc spreadsheet • Perfect Calc tutorial • Fast Graphs • Perfect Link (modem program) • Home Accountant Plus • Hardware Diagnostics • menu system •

Besides these, the VIOLIN-ATC runs all the popular IBM programs such as LOTUS, DBASE, AUTOCAD, WORDSTAR 2000, WORD PERFECT, and many more.

We insure your VIOLIN-ATC will work reliably because of our extensive burn-in and testing. If service is required you can be assured that we will promptly repair or replace your VIOLIN-ATC during your 180 day warranty. Parts and service will be available on a continuing prompt basis to serve you after that. Call before you order to confirm availability and exact configuration as prices and specifications are subject to possible change. We also will custom configure your VIOLIN-ATC with reliable upgrades such as memory, monitors, EGA cards, larger or more hard drives and tape backups to maintain the quality you expect from Godfather's. I hope you are convinced that we have the best IBM-ATC compatible, and for the best price anywhere.

WE ONLY BUY USED EQUIPMENT . . . UNLESS NEW COSTS LESS



LET US KNOW IF YOU ARE INTERESTED IN JOINING OUR FAMILY TO GET A PIECE OF THE ACTION. PLEASE WRITE US IF YOU HAVE LARGE OR SMALL QUANTITIES OF NEW OR USED EQUIPMENT EITHER TO BUY, SELL, OR TRADE, OR WE CAN ADVERTISE & SELL IT FOR YOU WITHOUT IMPLICATING YOU!! (HEH! HEH!)

TERMS: CASH, CERTIFIED CHECK, MONEY ORDER OR BANK WIRE • MASTERCARD ADD 4% AS PRICES ARE DISCOUNTED 4% FOR CASH • ADD $35 SHIPPING & HANDLING FOR EACH VIOLIN-ATC (UPS GROUND ONLY).

P.O. BOX 3037 • 1154 W. HIGHWAY 436 • FOREST CITY, FL 32714 • (305)774-1111

AST Research
continued from page 174

conventional memory to 640 kilobytes and automatically add the remaining RAM as expanded memory. Advantage Premium memory also can be used in the AT's 1 to 16 megabyte extended memory area and accessed directly under the XENIX operating system.

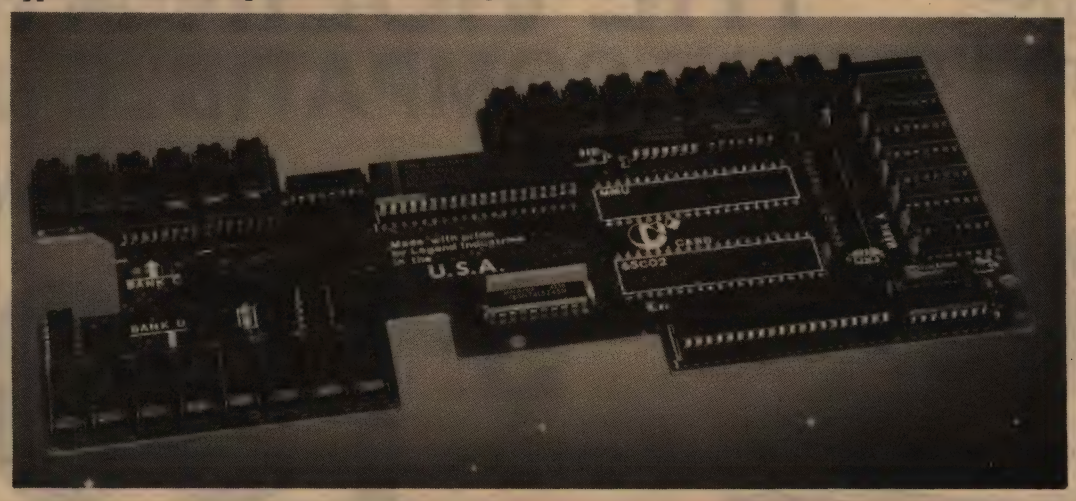
Advantage Premium comes with AST's SuperPak utility software as well so users can easily create RAM disks and allow for print spooling.

The Advantage Premium expanded memory/multifunction board features two serial ports (one standard, one optional), one parallel port, and an optional game port for connection to AT-compatible peripherals. It is priced from $695 to $1545 depending on configuration and was available in July.

For more information contact AST Research, 2121 Alton Avenue, Irvine, Calif., 92714. Telephone: (714) 863-1333. ●

Legend Industries Introduces 1 Meg RAMcard For Apple IIc

Legend Industries, Ltd. of Pontiac, Michigan announces the introduction of the Legend C'Card, an upgradable 256K to 1 megabyte RAMcard for the Apple IIc. The C'Card provides up to 1152K of total memory for the Apple IIc, configured as either RAM or electronic disk emulation. DOS 3.3 and ProDOS disk emulators, as well as a wide range of utility programs, are included with the C'Card.



The C'Card is 100% compatible with Apple's Auxiliary Memory Management and a broad range of IIc software. It offers up to a megabyte of AppleWorks Desktop when combined with Legend's Executive Desktop System software. With Legend's unique Desktop Mouse software, the Apple Mouse can be used throughout AppleWorks.

The C'Card may be installed inside the Apple IIc under the keyboard by either the user or the local Apple dealer. It adds less than 7 ounces to the IIc.

The list prices of the C'Card are $369—1 megabyte; $319—768K; $269—512K; and $219—256K.

For more information, call or write Legend Industries, Ltd., 2220 Scott Lake Road, Pontiac, Michigan 48054; 1-313-674-0953 or 1-800-5-LEGEND.

Mention that you read about it in *Computer Shopper*. ●

Spartan, Apple II+ Emulator To $299

Mimic Systems announced that it has reduced the price of Spartan (an Apple II+ emulator) from $599 to $299. The Spartan enables users to run more than 95% of all Apple II+ software on Commodore 64 microcomputers.

According to Spartan, many families bought Commodore 64s as their introduction to personal computing. Now the children in those families are using the Apple II+ in school. The Spartan now gives those families access to the Apple II library of educational software without forcing them to discard their Commodore."

Industry analysts estimate that there are more than two thousand educational computer programs currently available for the Apple II+.

The Spartan is a flexible, bus-oriented microcomputer system which is closely coupled to the Commodore 64. In addition to offering software compatibility, the Spartan allows users to add a variety of Apple peripherals and options, such as 80-column display cards, music synthesizers, Z-80/CPM cards, along with many others.

For more information, contact Mimic Systems; 18027 Highway 99; Building A, Suite I; Lynnwood, WA; 98037; or by calling (800) 663-8527.

Mention that you read about it in *Computer Shopper*. ●

Apple II+ Emulator For Commodore 64

☐ **DISK SERVICE MANUAL - $22**
It's a dirty job but everybody's got to do it! Maintain, repair, adjust, align disk drives without special equipment/software. 5.25", 8", microfloppies. IBM-PC/Compatibles, Apple, Commodore, Kaypro, Tandy, TI, HP, Atari, DEC, etc. 100+ photos, figures.

☐ **DISK DRIVE TUTORIAL - $17**
Theory and practical facts on drives, diskettes, FDCs, formatting, interfacing, software. Same drive types as listed above. Many photos, figures, purchase and use tips.

☐ **PRINTER & PLOTTER MANUAL - $15**
Types, descriptions, specs., and 100+ interfaces (parallel and serial). Detailed plans of X-Switcher, Buffer, Serial-To-Parallel, Parallel-To-Serial and Breakout devices. Repair, maintenance info. Many photos, figures.

☐ **SUPER RE-INKING METHOD - $7**
Re-ink cloth ribbons for about 50 cents and 10 minutes each. Plans for el cheapo motor-driven re-inker. Commonly available, inexpensive ink (5 colors) and carrier. Save $$$$!

☐ **COMPUTER PHREAKING - $15**
Dozens of computer crime methods and countermeasures. How to gain entry into systems. BBS advice; password defeats; EMI and audio eavesdropping; TEMPEST; Van Eck methods; crosstalk amps. Glossary of 200 phreak terms.

☐ **ABSOLUTE COMPUTER SECURITY - $20**
Dozens of simple, versatile, very secure computer security methods. Many security tips. Plus our INVULNERABLE BASIC encryption program (IBM-PC/Compatible). Plus $1,000 Cipher Contest rules with 25,000 char. ciphertext. Manual + IBM-PC diskette - $50.

☐ **CRYPTANALYSIS TECHNIQUES - $15**
Five powerful BASIC programs (IBM-PC/Compatible) to analyze and decrypt difficult ciphertext. Manual + IBM-PC diskette - $40.

☐ **COPIER MANUAL - $15**
Compares 100+ popular, modern copiers (17 makes) for features, quality, price, use. Many purchase, use tips. How copiers work. Maintenance, repair info. Save $$$$!

☐ **VORTEX GENERATOR - $7**
Heat/cool with simple 3-port device. Uses no moving parts, electricity, fossil fuel, liquid or freon. Guaranteed scientifically sound. Fascinating and practical. Plans.

☐ **KW-HR METERS - $12**
How electric energy meters work; calibration; many error modes ANSI Standards. Demand Meters, Pole Meters, Polyphase Meters; meter creep; overload droop; etc.

☐ **HEAL THYSELF - $8**
Plans for electromagnetic healing methods used by FDA-approved and other devices.

☐ **ELECTROMAGNETIC BRAINBLASTER - $20**
Plans for electromagnetic weapons and lab devices. Optimum circuits, waveforms, intensities. Comprehensive and mind boggling!

☐ **THE "GOLDFINGER" - $7**
Metal detector finds GOLD, SILVER, PLATINUM, COPPER, ALUMINUM. Rejects all ferromagnetic objects. Simple circuit. Plans.

☐ **THE "SILKWOOD" - $7**
Simple (2-IC), effective radiation detector. Uses no high voltage, heavy/special batteries, or special tubes. Radiation is everywhere! Use it now and on the Day After! Plans.

☐ **STOCKPRO - $15**
Manual and BASIC program for common stock investments. Developed for N.M.S.U.

☐ **TECHNICAL RESEARCH SERVICES**
20,000+ electronic and computer design articles and clips in computer database accessed by title and subject. Digital, microprocessor, analog, hybrid, nomographs, software listings, etc. - all types! Provide us keywords, we return title/subject list. $25 search (1-20 keywords); $1 for each article you want copied.

Consumertronics Co. 2011 CRESCENT DR. ALAMOGORDO, NM 88310 P. O. DRAWER 537

ZOOM/MODEM IIe

for the Apple II, II+, and IIe

"Each month inCider's editor-in-chief, technical editor, and review editor pick what they believe is the outstanding new product from literally hundreds of submissions. For June the honors go to ZOOM Telephonics for their ZOOM/MODEM IIe. The editors were impressed with its price,* ease of use, reliability, and its bundled software."

*$179 including software, $199 with advanced software

inCider Editors' Choice, June 1985

Telstar Price **$99.** MC, VISA, AMEX Accepted Free Shipping!

- Fully Micromodem IIe compatible
- 300 baud auto-dial/auto-answer
- Complete! Plug-in modem with software
- Monitor speaker
- Free! $275 in database offers including Compuserve, Source, Dow Jones
- Made in USA—2 year warranty

TELSTAR
145 Lincoln Street, Boston, MA 02111
Call Toll Free **MC, VISA, AMEX Accepted**
1-800-344-3311
in MA 617-423-1237

10-day no-questions-asked money-back guarantee

COMPUTER SHOPPER™

Advertising Deadline is the 2nd Monday of each month.

CompuServe Releases "B" Protocol To The Public Domain

CompuServe has placed specifications for the asynchronous "B" Protocol file transfer program into the public domain, and will provide a generic implementation at no charge. The "B" Protocol has been proprietary since its development in 1981.

"The beauty of 'B' Protocol is its user transparency. Unlike many other protocols, CompuServe 'B' Protocol accomplishes file transfers without the need for arcane local commands or other user intervention," said Alexander B. Trevor, CompuServe executive vice president and chief technical officer.

Protocol features include interrogation of remote computer characteristics such as transfer capabilities, cursor addressing and graphics modes, as well as host initiation of file transfers in either direction. "B" Protocol has lower transmission overhead than the XMODEM or Kermit protocols, which results in faster throughput, according to Trevor.

Additional features include preservation of file length and translation of ASCII files to native conventions, such as end-of-line termination adjustments for target machines during transmission.

The specification documents and "C" language sources for the generic implementation can be downloaded free of surcharge from the CompuServe Information Service. Information Service subscribers can obtain additional information by entering GO VIDTEX at any system prompt.

For further information contact CompuServe, 5000 Arlington Centre Boulevard, P.O. Box 20212, Columbus, Ohio 43220. ●

ACCELERATED XT & AT

MOTHERBOARD $129 — 8/4.7 MHz — SYSTEM $799

XT-88 Turbo: 8088-2 CPU: BIOS and 8 I/O slots standard, 640K or 256K RAM optional.

$249 — 8 MHz — $919
$319 — 10 MHz — $989

XT-186: 80186 CPU: BIOS 1.0 standard, BIOS 2.0 optional, 8 I/O slots: 6 XT type and 2 AT type, 640K or 256K RAM optional.

Above systems include motherboard plus:

256K RAM, XT keyboard and enclosure, Dual 360KB floppy drives with controller, Monochrome Graphics/Printer Card, 135W Power Supply.

$599 — 8/6 MHz — $1549

XAT 286: 80286 CPU, BIOS, 6 I/O slots: 3 AT type and 3 XT type. 512K on-board RAM optional. XT sized. AT compatible, fits XT case.

$629 — 8/6 MHz — $1649
$729 — 10/6 MHz — $1749

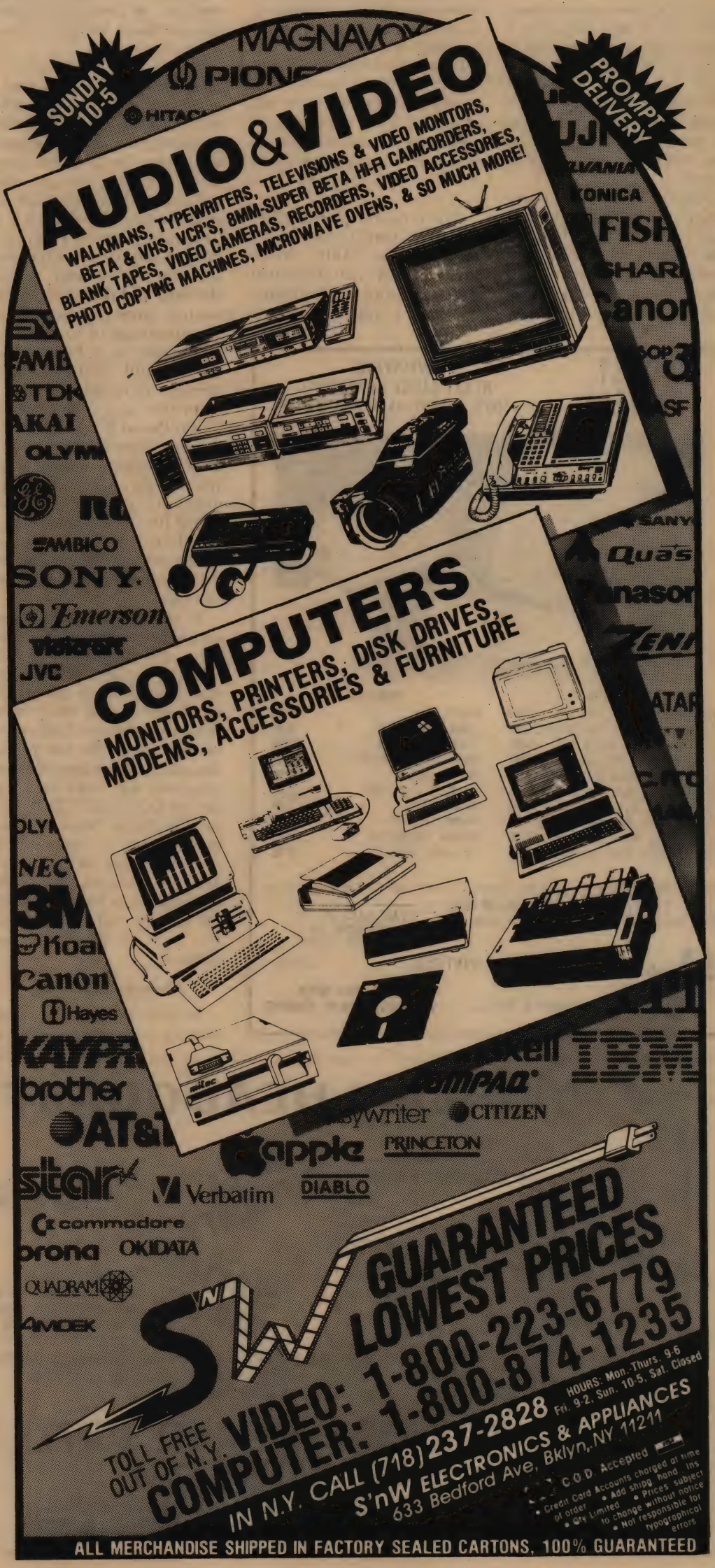
AT-286: 80286 CPU, Phoenix BIOS, 8 I/O slots: 6AT type and 2 XT type, 640K or 1M RAM optional.

Above systems include motherboard plus:

640K RAM, AT keyboard and enclosure, 1.2 MB floppy drive with Hard Disk/Floppy Controller, Monochrome Graphic/Printer Card, 195W Power Supply. Interface and peripherals available.

DEALER INQUIRIES WELCOMED

Challenger COMPUTER, INC.
THE PRICE PERFORMANCE LEADERS
122 South Rd., Bedford, MA 01730 (617) 275-3517



Apple CP/M continued from page 173

portant fact you ought to know about it: it does not have a built in editor. If you want to write a CBASIC program, it must be written using the dreaded CP/M ED editor, or using WordStar or NewWord in "non-document" mode, or any other popular CP/M editor.

Finally, there is Turbo Pascal. In the unlikely event that you have never heard of this version of Pascal from Borland International, let us just say that beside being an excellent programming language, it is an extraordinary value that has literally redefined what value is in the software marketplace. A version of Turbo Pascal can be had for virtually any CP/M or MS-DOS machine for a list price of about $39.00. It can be purchased for considerably less than that from a number of legitimate software dealers. It is almost worth getting CP/M for your Apple just to run Turbo Pascal.

This is not the place, nor do I have the room, to open up the Pascal versus BASIC, structured versus non-structured programming language debate. I feel that each language has its advantages and disadvantages and its niche in computing. To say that one is absolutely better than another is being pointlessly chauvinistic.

To get back specifically to Turbo Pascal, it is a real compiled language. Some people do not like to go through the compiling step when programming, they say it slows them down. As compilers go, this one goes extraordinarily fast. A good compiler (like Turbo) is a tremendous aid to programming. A good compiler is probably one of the best syntax checking and debugging tools around. Once you get used to the advantages of a compiler, it is painful to go back to the useless and cryptic error messages of an interpreter.

Another great thing about Turbo Pascal is that its built-in editor is based against standard WordStar commands. If you can edit a WordStar document, you can edit a Turbo Pascal file. If for some reason you do not like those editing commands, you can redefine the editing commands any way you like.

If you flip through some magazines you will notice that there are a number of interesting and powerful add-on and enhancement programs for Turbo Pascal both from Borland and other third-party vendors. Read the fine print! You will find that most of these programs will work only for the MS-DOS and PC-DOS versions of Turbo. Some of these enhancements legitimately need the extra memory that MS-DOS addresses. The CP/M marketplace is not addressed, not for any technical reason, but out of ignorance or laziness.

Thought Processing

So you do not do much writing, and programming is not exactly your mission in life, but the fact that you own a computer means that you do deal in information, and information means the use and organization of ideas. An entire new subset of programs has evolved that is used for the organization and collating of ideas. These programs have been aptly termed "thought processors."

Basically, all thought processors follow the outlining techniques that you probably learned in high school. For example, if you were writing a report on the Amazon you would begin by listing on paper the principle features of the Amazon. Then under each of these main topics you could add any number of sub-topics. Then under a sub-topic other subsidiary items could be added. By the time this process was complete, the outline on your Amazon report would be a detailed mapping of what your final report would look like. The actual writing of the report may be little more than the embellishment of the ideas in the outline.

Thought processors work similar to this, the main difference being that instead of pieces of paper or index cards for your ideas, you have the flexibility and power of using your computers memory. With a good piece of thought processing software, you will never have the problem of trying to squeeze five lines of information where you had only alloted space for two. As long as you have disk space, you can expand your outline.

One of the best, and most interesting, "thought processors" around is a program called KAMAS. KAMAS is an acronym for "Knowledge And Mind Amplification Systems" and it is produced by a company called Kamasoft. KAMAS is an oddity in commercial software for todays market in that it is a first class piece of software that is only available for CP/M systems. Besides being an excellent program, that is reason enough to have it.

Actually KAMAS is really two programs. First, there is the previously mentioned thought processing part of the package. Then there is the programming language part of KAMAS. That is correct, KAMAS comes with its own programming language. In many respects, this Forth-like language is the most interesting aspects of the program in that it is an open door for customizing KAMAS. The people at Kamasoft surveyed their users and found that few of them actually used the language (I have only toyed with it). They recently came out with a program called Out-Think which is effectively only the thought processor part of KAMAS. They did more than just extract the thought processor from KAMAS, the program was upgraded and buffed up to smooth out some of KAMAS's rough edges. At less than $50, Out-Think is one of the best software bargains around.

Problems

One reader writes that he has been having difficulties configuring his version of the relatively ancient Magic Wand word processor (circa 1978) to work properly with a PCPI Applicard. It seems that Magic Wand uses the ESC key to go from text screen to the command screen but that the Applicard traps the ESC. Any assistance on this problem would be appreciated. Incidentally, the PCPI Applicard which happens to be an interesting CP/M card in that is onboard RAM can be used as extra RAM in standard Apple mode. This card can be had today for a very reasonable price bundled with various MicroPro software packages. Look for ads in recent issues of *Computer Shopper*.

Companies Mentioned

MicroPro International, 33 San Pablo Ave., San Rafael, CA 94903, 415-499-1200. Newstar Software, Inc., 1601 Oak Park Blvd., Pleasant Hill, CA 94523; (415) 932-2278. Microsoft Corp., 10700 Northup Way, Bellevue, WA 98004. Digital Research, Inc., P.O. Box 579, Pacific Grove, CA 93950. Borland International, 4585 Scotts Valley Dr., Scotts Valley, CA 95066. Kamasoft, Inc., P.O. Box 5549, Aloha, OR 97007, 503-649-3765.

Correspondence

All correspondence to this column is to the author care of: *Computer Shopper*. ●

DUST COVERS

ANTI-STATIC
HEAVY GAUGE BEIGE VINYL
100% MONEY BACK GUARANTEE

COMPUTERS:		PRINTERS	
Apple IIE, Mon, Sys, Duo Drives	15.95	Brother 15	9.95
Apple IIE, Color Mon, Sys, Duo Dr.	15.95	Epson RX or FX 80	9.95
AT&T 6300, Mon, Sys, & KBO.	15.95	Epson 100/185/286	12.95
Compaq Deskpro, Mon, Sys, & KBD.	15.95	Gemini 10X or 15X (SG)	9.95
Leading Edge Model D	15.95	IBM Proprinter	9.95
IBM PC or XT, Mon, Sys, & KBD.	15.95	Juki 6100 11.95 (W/T)	12.95
IBM AT, Mon, Sys, & KBD	15.95	Okidata 82/92	9.95
IBM PC Junior, Mon, Sys, & KBD.	14.95	Okidata 83/84/93	11.95
Macintosh or Mac Plus	14.95	Okidata 120/182/192	10.95
Sanyo 550/555, Mon, Sys, & KBO	$14.95	Panasonic 1090/1091	10.95

Over 300 Different Covers For Computers, Printers, Etc. Call Or Write For Complete Price List:
(914) 634-9071
$2.00 Shipping Fee (N.Y. Residents Add Sales Tax)

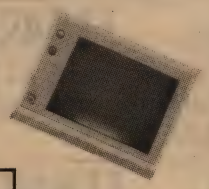
TAKE $2.00 OFF ORDER WITH AD!

Quality Compu-Covers Inc.

DEALERS INVITED (10-84)

P.O. Box 649
New City, N.Y. 10956

CAD/CAM HEADQUARTERS



SPECIAL

SUPER DISCOUNTS

PLOTTERS CAD/CAM

MONITORS DIGITIZERS

Houston Instument Plotters	List Price	Your Price
DMP29	$2295	$1720
DMP41/42	$3295	$2470
DMP51/52	$4975	$3750
DMP51/52MP	$6495	$4995

High Res Monitors	List Price	Your Price
Nec 1401 Multi-sync	$799	$629
Microvitek 890D1 (14inch)	$575	$459
Amtron CD1924 1280x1024	$3590	$2749
Hitachi 4619D 1024x800	$3990	$3049

Lowest Prices on Most Popular CAD/CAM Packages and Digitizers—Call for Price
Additional charge for shipping & handling. Add 3% for credit cards.
Virginia residents add 4% sales tax

NAPSCO

NATIONAL PERIPHERAL SUPPLY CO.
800-882-8834

P.O. Box 206, 137 East Olney Rd., Norfolk, VA 23501
Virginia Residents Call 804-625-0455

NAPSCO

Next Generation continued from page 84

sidered a task for a novice. First you must remove the 6502 and MMU chips from your IIe's motherboard. On many Apples the MMU is soldered directly to the motherboard. If you have a MMU which is soldered to the motherboard I highly recommend finding a corporative dealer who will swap out the motherboard with a socketed motherboard. If you purchase the 65C816 card from a dealer you normally purchase your products from, then the dealer probably will be willing to swap out your motherboard if necessary. Once you remove the chips, you must place the MMU onto the 65C816 card, and plug that card into sockets on the Apple's motherboard which were occupied by the 6502 and MMU. Two sets of 40 pin chips must align exactly with the sockets. If a pin is bent or out of the socket, you can burn out a chip, or possibly your entire motherboard. Once the board is installed a short ribbon cable attaches it to your Ramworks board. Again try to have your friendly dealer do this work.

After all of that work you will find out the frustrating part—nothing has changed, and you will not get any improvements in any of your present programs. The only programs which work better with the 65C816 are programs which are designed to work with it. The Merlin and Orca/M Macro assemblers for the Apple already support the 65C816 op codes, but no commercial programs are available yet which use the extra memory capabilities. This situation is changing very quickly though. An integrated business program which is similar in function to Lotus 1-2-3 is presently in beta test, and many other software developers are working on 65C816 based programs.

Many computer owners were surprised, and confused when Applied Engineering introduced Ramfactor, another memory expansion card for the Apple, but incompatible, and apparently competing with Ramworks. Both cards are designed for memory expansion, both cards hold up to 1 Mbyte on board, and both cards can be expanded up to 16 Mbyte using expansion boards. There is confusion, and for a good reason. For many users either card will do, but for some one card will be better than the other.

Ramworks fits into the IIe's AUX slot, and replaces the Apple extended 80 column card, if you already have one. It gives your IIe an 80 column display and Double HIRES graphics capabilities in addition to the extra memory. In addition an RGB expansion board is also available which attaches to the back of the RGB board. The latest version has two outputs, a 15 pin connector compatible with the Apple II video connector, and a 9 pin IBM compatible output. The sync polarity, and color map are both switch selectable. Since Ramworks has been around for a while, a variety of programs are available which support the extra memory available. Applied Engineering supports RAMdisk programs for DOS, Pascal, CP/M, and ProDOS; and memory expansion for Appleworks. The Appleworks expansion will expand the database limits to 15,200 records, and the word processor to 15,200 lines.

Ramfactor fits into slot 1 to 7 of any Apple II or compatible unit. It will work with the earlier Apple IIs, and various compatible computers including the Franklin 2000 and Laser 128 as well as the Apple IIe of course. Since it fits into a slot, it has a built in drive program on ROM, and is slightly easier to use. In addition, since its driver program looks like a disk drive/mass storage device, Ramfactor will "boot" like a disk drive. In addition a battery backup is available for the Ramfactor which will save all of the memory on the Ramfactor, and expansion boards in case there is a power failure. There is also a battery backup for Ramworks, but it will only

continued on page 182

LOWEST PRICE? YES!!!

DS/DD 39¢
BULK 5¼"
DISC #GD3

DS/DD 59¢
BOXED 5¼"
DISC #GD2

HIGHEST QUALITY? YES!!!

WE GOT AN OFFER TOO GOOD TO REFUSE!!!
A new supplier offered us the best price imaginable. Thanks to them, our new GD-3 disk is now the lowest priced DS/DD disk in the country, but is still certified error free at more than 25% above industry standards. They come with lots of labels and tabs and have Tyvex sleeves, not paper that creates static and lint. Sorry, no quantity discounts at this low price!

GENERIC DOESN'T MEAN JUNK
Our GD-2 disks are the best quality disks we sell. Their error free certification level exceeds that of Maxell,™ Dennison Elephant,™ or Wabash Data-Tech,™ which we also sell at the lowest prices in the country. They are certified error free at 75% above industry standards, with jackets 25% thicker than industry standards. They come with Tyvek sleeves, labels, and write-protect tabs.

There is no baloney to slice. We don't claim to manufacture our own private label discs, and there is no charge for printing private label boxes or sleeves. We just offer discs certified at far above industry standards at far below competitive prices, even for garbage discs. GD3s and GD2s carry a lifetime replacement warrantee against manufacturing defects.

We have made a longterm arrangement with the two manufacturers who have agreed to supply these discs. You can be sure of getting the same disc a year from now at the same low price. We won't auction off this business to whoever bids the lowest price for minimum industry standard discs or "dropouts", discs that failed to meet the manufacturers specifications.

Shipping $3.00 per hundred or part, APO, FPO, AK, HI, & PR add $6 more. Visa or Mastercard orders under $50 add $2.00. Orders under $30 add $3 service charge. Money orders, cashiers checks, and personal checks earn a 2% discount, but personal checks delay shipment for up to 14 days for clearance. New Jersey residents add 6% sales tax. We ship COD cash or certified check only for a $3.00 charge. Quantity discount on GD2 1%/300, 2%/500, 4%/1,000.

VISA®

GREEN TREE

MasterCard

P.O. Box 249
11 Osage Road
Rockaway, N.J. 07866

COMPUTER SUPPLIES

(201) 627-9472
(800) 367-2897

Next Generation continued from page 181

save the memory on the expansion card.

Most importantly the Ramfactor card is compatible with the Apple Memory Expansion card and will be compatible with any future computers, or upgrades Apple Computer decides to come out with. The compatibility with the Apple Memory Expansion board also ensures that it will be compatible with software from other manufacturers in the future.

Ramfactor does have dissadvantages though. If your slots are full on your Apple II then you may not have room for a Ramfactor board, whereas a Ramworks board installs in the AUX slot, and includes the functions of the extended 80 column card it replaces. If you use Appleworks to make massive documents, then Ramworks may be a better choice. The Ramfactor Appleworks expand is not as powerful as the Ramworks Appleworks expand, the lines in the word processor and records in the database are "only" expanded to 5,100 each.

Which card should you choose? It all depends on your needs. Ramworks is slightly more powerful for Appleworks, but Ramfactor has more versatility as an expansion device. If every slot of your IIe is filled, then Ramworks will probably be the better choice. If you want to hookup an RGB monitor to your IIe, then a Ramworks/RGB board is probably the best combination. If you have an Apple II Plus, or if you want to have the versatility of having a bootable Ramdisk, then Ramfactor is the way to go. A minor consideration is Ramfactor is $40 more expensive than a Ramworks card with the same memory. Confusing? Slightly, but at least you have the choice. You can decide which card is better for your purposes, rather than having the decision made for you.

A Closer Look At Ramfactor

Ramfactor was designed to be compatible with Apple Computer's memory expansion board, but with more versatility and power. Apple's board can hold from 256K to 1 Mbyte, and is designed to hold one application at any given moment. Ramfactor can be expanded up to 16 Mbytes, has a battery backup option, and can be partitioned into separate sections. When you boot Ramfactor you are given a menu describing each partition. The partition program does takeup a small amount of memory for overhead (2K) but that memory is negligible in comparison with the memory available (356K to 1 Mbyte, or more). Applied Engineering has also corrected major features (documented bugs) in Appleworks 1.3. Apple Computer released version 1.3 as its support for the Apple Memory Expansion card, and its true that Appleworks will use the memory expansion card to expand its desktop. The trouble is that Apple forgot to expand Appleworks' built-in limitations. An unmodified Appleworks 1.3 with either Apple's Memory Expansion card or the Ramfactor card is still limited to 2,250 lines in the word processor, and 1,350 records in the database—the same limits as on a 128K Apple. You can have over 700K of free space available on your desktop, but once you type in 1,350 records into your database—you will run out of memory even if your desktop says that more memory is available!! Compounding the problem, if your file somehow exceeds 120K it will not fit onto a standard floppy diskette. If you don't have a Unidisk or hard drive, then you are out of luck! Fortunately Applied Engineering's Super Appleworks Desktop Expand will expand Appleworks' internal limitations. You will have 5,100 lines in the word processor, 5,100 records in the database, and multi-disk save capabilities, among other enhancements. These are major limitations with Appleworks, and its fortunate that Applied Engineering has decided to address the problem. Another manufacturer of a similar RAM card actually states in its ads that their cards are "more efficient" than the Ramfactor card, and provide larger desktops for Appleworks. They're more efficient simply because they didn't bother to put in the enhancements, and do not provide the extra software support! The desktop may be slightly larger—but you cannot put any large files onto that desktop. Incidentally, those same "other manufacturers" also state that their card is expandable up to 6 meg of memory. That's true only if you want to plug six of their 1 meg cards into six slots of your Apple. With Ramfactor any memory you have, for 256K to 16 Mbyte only takes one slot.

Besides its use as a memory expansion card, it is quite easy to setup Ramfactor as a hard

continued on page 183

Tis the Season to give that special person Computer Shopper at our low Holiday Rates

See details on page 54.

EPSON

FX85
328

FX 286 .... Low
FX 80+ 299
LX 80 209
LQ 800 .... Low
LQ 1000 ... Low

brother.

M1509 ..... low
HR-10 239
HR-15xl ... 339
HR-35 679
TwinRiter . 799

Panasonic.

1090 199
1091 229
1592 459
1595..... NEW
3131 299
3151 379

PRINTER

SMCorona100150
Citizen 10 200
Citizen 15 300

DbaseIII+
$339.00
Framework .. 359.00

MODEM

$149

1200b Hayes compatible
Half card internal
Pop-up software
Five year warranty

$148

1200 Hayes compatible
Modem & telephone in one
Auto dial, auto answer
Work like a champ

$1777

Laser Jet 2150
Laser Jet+..... 2850
7440 color pro..... 999
7450 plotter 1395

DISKETTES
.49 5 1/4" DS/DD

Lifetime warranty. Jacket label,write-pro. tab.Sold in multiple of 100 only.

POWER SUPPLY

135W XT replacement .. 69
150W XT heavy duty ... 89
200W AT replacement .. 115

HARD DISK

20mb w/controller ... 399
30mb w/controller ... 479
48mb w/controller ... 599

Switch box

AB db25 2-way 49
AB centronic 2-way .. 59
AaBb db 25 X type ... 69
ABCD db 25 4 way 79
ABCD centronic 4-way 99
Gender changer 8.0
Printer buffer 128k 109

MOUSE

Mouse sys. PC-mouse 99
Microsoft mouse-bus 100
Microsoft mouse-ser 110

COMPAQ

PORTABLE
2 drs,256k 1599
2 drs,640k 1699
DESKPRO
2 drs,640k 1799
20mb hard disk add .. 549

30mb hard disk add .. 649

MONITORS

Samsung mono TTL 79
NEC multisynch 529
Sony RGB/TV 525
STB EGA+ board 279

KEYBOARDS

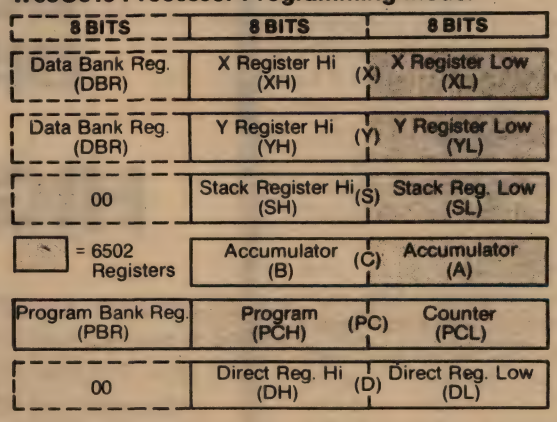
Key bd. AT/XT 5160.. 69
Key bd AT/XT enhance119
Case for XT 39
Case for AT 79

BOARDS

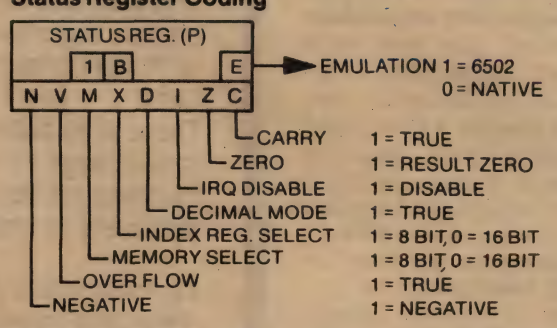
6-pak alike w/game. 79
512k memory board .. 49
Color graphics bd .. 64
Mono graphics bd ... 69
Serial port..... 42
Max I/O P,S,Clk,FDC. 89
XT floppy controller 35
AT floppy,HD contr. 199
XT main bd 640k max.109
AT main bd 1mb max.599

TEXAS MICROLAND
713-668-4695
6808 Bissonnet #159 Houston, Tx 77074
Term: Personal chk. ok (10 day hold). Immediate shipping if money order or cashier chk. received with order.Price & availability subject to change without notice & do not include shipping.Texas res. add sale tax.Mail order only

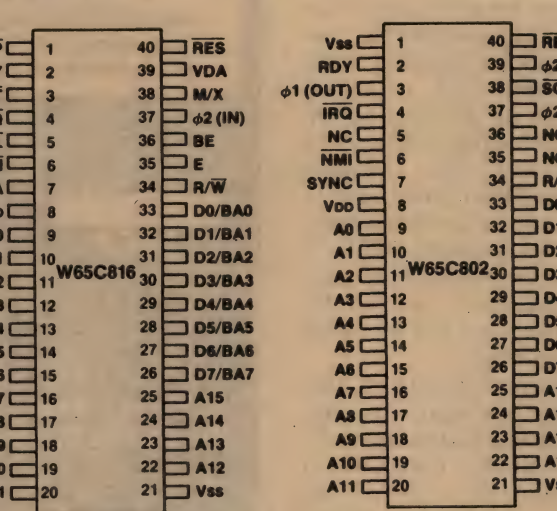
W65C816 Processor Programming Model



Status Register Coding



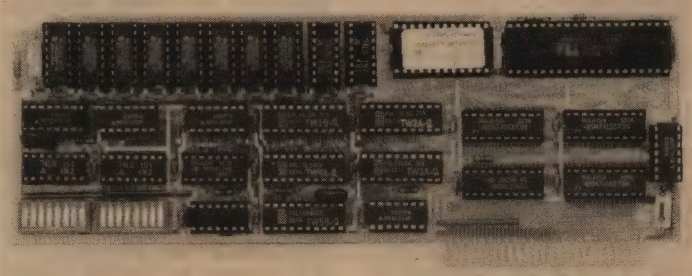
Pin Configuration



Next Generation continued from page 182

disk emulator. Put Ramfactor into slot 7, and install your applications. When your Apple is cold booted (PR#7) the Ramfactor will "boot" and run your programs. If you are using different operating systems, you will be placed into the parition program, and you can select your applications from a menu. On enhanced IIes the Ramfactor looks like a disk drive, and will automatically boot if it is in slot 7. The autostart ROM on Apple II Pluses and non-enhanced IIes do not recognize the Ramfactor as a disk drive, but Ramfactor can still be booted with the standard "PR#7" command. If you have the battery backup unit and an enhanced IIe, then your Ramfactor will boot and run when you powerup your Apple. The automatic powerup bootup makes many applications possible. If you are setting up an Apple for demonstrations, it can have a Ramfactor installed without any floppies for security reasons.

As this issue is going to press, an expansion memory board with 1 Mbyte of RAM installed retails for $899. Extra banks of 1 Mbyte each are available for $799. 1 Mbyte RAM chips are falling in price, and may be as inexpensive as 256K chips within a year. For the ultimate in memory, the expansion board is compatible with 4 Mbyte RAM chips, and once those chips start to come down in price they will become practical.



Transwarp. The 16 switches in the bottom left configure the Transwarp for different types of interface cards.

Ramworks and Ramfactor are both excellent ways to expand your Apple's memory. I have a Ramworks card in my Apple IIe, and a Ramfactor in my Apple II. The only question to decide upon is not whether or not to get a board, but which one to get. As far as how much memory, 256K RAM chips are inexpensive enough to reasonably expand either card to 1 Mbyte. At the present I do not recommend memory beyond 1 Mbyte, unless it is specifically needed for an application. For most of us it will be much easier to wait a while until 1 Mbyte and 4 Mbyte RAM chips come down in price.

With the memory expansion you have a much more powerful Apple with as much as a megabyte or more of RAM. The trouble is that it still operates at the same 1.023 Mhz clock rate as the original Apple II gathering dust in your closet. What can you do?

Several companies have produced "speedup" or "accelerator" cards which electrically replace the Apple's 1 Mhz processor with a 3 Mhz version of the 65C02. Applied Engineering's Transwarp is the latest, and the most powerful of these cards. The Transwarp has a 3.6 Mhz version of the 65C02, and 256K of ultra-fast RAM. The RAM emulates the Apple's internal memory, the first 64K of memory on an extended 80 column card, and even a 16K RAM card if it is

continued on page 184

Table 1. W65C816 Compatibility Issues

	W65C816/802	W65C02	NMOS 6502
1. S (Stack)	Always page 1 (E = 1), 8 bits 16 bits when (E = 0).	Always page 1, 8 bits	Always page 1, 8 bits
2. X (X Index Register)	Indexed page zero always in page 0 (E = 1), Cross page (E = 0).	Always page 0	Always page 0
3. Y (Y Index Register)	Indexed page zero always in page 0 (E = 1), Cross page (E = 0).	Always page 0	Always page 0
4. A (Accumulator)	8 bits (M = 1), 16 bits (M = 0)	8 bits	8 bits
5. P (Flag Registor)	N, V, and Z flags valid in decimal mode. D = 0 after reset or interrupt.	N, V, and Z flags valid in decimal mode. D = 0 after reset and interrupt.	N, V, and Z flags invalid in decimal mode. D = unknown after reset. D not modified after interrupt.
6. Timing			
A. ABS, X ASL, LSR, ROL, ROR With No Page Crossing	7 cycles	6 cycles	7 cycles
B. Jump Indirect Operand = XXFF	5 cycles	6 cycles	5 cycles and invalid page crossing
C. Branch Across Page	4 cycles (E = 1) 3 cycles (E = 0)	4 cycles	4 cycles
D. Decimal Mode	No additional cycle	Add 1 cycle	No additional cycle
7. BRK Vector	00FFFE,F (E = 1) BRK bit = 0 on stack if $\overline{IRQ}$, $\overline{NMI}$, $\overline{ABORT}$. 00FFE6, 7 (E = 0) X = X on Stack always.	FFFE,F BRK bit = 0 on stack if $\overline{IRQ}$, $\overline{NMI}$.	FFFE,F BRK bit = 0 on stack if $\overline{IRQ}$, $\overline{NMI}$.
8. Interrupt or Break Bank Address	PBR not pushed (E = 1) RTI PBR not pulled (E = 1) PBR pushed (E = 0) RTI PBR pulled (E = 0)	Not available	Not available
9. Memory Lock ($\overline{ML}$)	$\overline{ML}$ = 0 during Read, Modify and Write cycles.	$\overline{ML}$ = 0 during Modify and Write.	Not available
10. Indexed Across Page Boundary (d),y; a,x; a,y	Extra read of invalid address. (Note 1)	Extra read of last instruction fetch.	Extra read of invalid address.
11. RDY Pulled During Write Cycle.	Ignored (E = 1) for W65C802 only. Processor stops (E = 0).	Processor stops	Ignored
12. WAI and STP Instructions.	Available	Available	Not available
13. Unused OP Codes	One reserved OP Code specified as WDM will be used in future systems. The W65C816 performs a no-operation.	No operation	Unknown and some "hang up" processor.
14. Bank Address Handling	PBR = 00 after reset or interrupts.	Not available	Not available
15. R/$\overline{W}$ During Read-Modify-Write Instructions	E = 1, R/$\overline{W}$ = 0 during Modify and Write cycles. E = 0, R/$\overline{W}$ = 0 only during Write cycle.	R/$\overline{W}$ = 0 only during Write cycle	R/$\overline{W}$ = 0 during Modify and Write cycles.
16. Pin 7	W65C802 = SYNC. W65C816 = VPA	SYNC	SYNC
17. COP Instruction Signatures 00-7F user defined Signatures 80-FF reserved	Available	Not available	Not available

Password Snatcher

RS-232 Data Tap

Lets you actually "see" the data being sent or received on an RS-232 line. Connect a terminal or microcomputer to the tap connector to capture data, or connect a serial printer to get a hard copy. Jumpers allow for routing TD, RD, or both to the tap.

$29.95

Features:

- TD, RD LED's monitor data on pins 2 and 3.
- On board jumpers let you swap pins 2 and 3 in seconds.
- Status LED verifies that pins 2 and 3 are connected properly.
- Female tap connection configured as a null modem.
- Passes all 25 lines.

Maya Electronic Products Co.

Texas residents add 5 1/8% sales tax. All cash orders postpd.

(915) 541-6525
P.O. Box 370068
El Paso, Texas 79937

HOW MUCH IS YOUR DATA WORTH?

After investing hours, days, months, generating your data base, designing your spread sheets, or simply backing up your favorite programs, don't gamble on loosing it all with poor quality diskettes.

ALL DISKETTES ARE NOT THE SAME!

Some are good, some are bad, some are marginal.

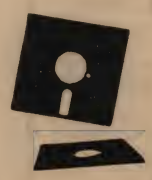
Disks vary in materials, processing, testing, and QUALITY CONTROL. Most manufacturers certify 100% error free diskettes — WHAT HAPPENS TO THOSE THAT FAIL? Many end up being sold as GENERIC.

Today, most diskettes carry a "Lifetime Warranty" - but what about your data? Your best GUARANTEE against unpleasant surprises is to buy only BRAND-NAME DISKETTES.

WE SELL DISKETTES ONLY FROM BRAND-NAME MANUFACTURERS

Priced from 59¢ per disk.

BULK PACKED WITHOUT LABELS OR ENVELOPES:



	QUANTITY 20	100	500	1000
5.25" SSDD	.72	.67	.63	.59
5.25" DSDD	.82	.76	.71	.66
5.25" DSDD-96TPI	1.51	1.30	1.21	1.14
3.50" SSDD-135TPI	1.85	1.59	1.48	1.39
3.50" DSDD-135TPI	2.35	2.01	1.88	1.76

TYVEC sleeves (envelopes) available with above, add .05 each.

STANDARD PACK OF 10 PER BOX:

TDK

	QUANTITY 10	50	100	500
5.25" SSDD	1.13	1.05	.97	.91
5.25" DSDD	1.40	1.25	1.15	1.09
5.25" DSDD-96TPI	1.62	1.47	1.35	1.29
5.25" HIGH DENSITY	2.89	2.69	2.49	2.39
3.50" SSDD-135TPI	2.00	1.88	1.74	1.63
3.50" DSDD-135TPI	2.97	2.74	2.49	2.25

3M

	QUANTITY 10	50	100	500
5.25" SSDD	1.30	1.20	1.11	1.04
5.25" DSDD	1.82	1.68	1.56	1.45
5.25" DSDD-96TPI	3.18	2.94	2.73	2.55
5.25" HIGH DENSITY	3.70	3.40	3.15	2.95
3.50" SSDD-135TPI	2.53	2.34	2.17	2.03
3.50" DSDD-135TPI	3.60	3.32	3.09	2.88

wabash

	QUANTITY 10	50	100	500
5.25" SSSD	.92	.85	.79	.73
5.25" SSDD	.98	.91	.84	.79
5.25" DSDD	1.15	1.06	.99	.92
5.25" DSDD-96TPI	1.75	1.62	1.50	1.40
5.25" HIGH DENSITY	2.50	2.35	2.15	1.99
3.50" SSDD-135TPI	2.08	1.92	1.79	1.67
3.50" DSDD-135TPI	2.89	2.55	2.45	2.39

SKC

	QUANTITY 10	50	100	500
5.25" SSDD	1.25	1.15	1.07	.99
5.25" DSDD	1.42	1.31	1.21	1.13
5.25" DSDD-96TPI	1.92	1.64	1.53	1.44
5.25" HIGH DENSITY	2.60	2.45	2.29	2.13
3.50" SSDD-135TPI	1.99	1.85	1.71	1.60
3.50" DSDD-135TPI	2.67	2.46	2.29	2.13

Call for prices on COLORED DISKS - RED, BLUE, GREEN, ORANGE, YELLOW.

VISA **SUPER SPECIAL – TDK 8" SSSD 99¢** MasterCard

CALL FOR LOW PRICES ON RIBBONS, PAPER, DISKETTE STORAGE CASES

Terms: Add $3 per order shipping & handling. In Illinois add 7% sales tax or provide resale certificate. Prices & terms subject to change without notice.

Call TOLL FREE 1-800-222-1248 In Illinois 312-882-8315

DIGITAL IMAGES

1185 TOWER RD. SCHAUMBURG, IL 60195

Next Generation continued from page 183

plugged into an Apple II or Apple II Plus. Whenever you turn on a Transwarp equipped Apple a logo will be displayed while your Apple's ROMs are copied into the Transwarp's fast memory and self-check is performed. After the test your disk drive boots, and everything operates normally—except it operates three and a half times faster. Only 65C02 calculations are speeded up though. The disk drive still operates at the same speed, your modem operates at the same rate over the phone line, and you won't type any faster, so overall the speed increase will vary from as slow as before the addition of your Transwarp to three times faster. If a program is highly disk resident, or requires a lot of user input, then it will not show much of a speed improvement. But if a program is memory resident, or performs many calculations, Transwarp will make it takeoff! With a Transwarp installed it takes a BASIC program 5 seconds to count from 1 to 10,000. Without a Transwarp it takes 14 seconds.

Certain peripherals, such as 80 column cards, printers, hard drive controllers can operate at the full Transwarp 3.6 Mhz speed, but other peripherals, like floppy drives, serial interfaces, and clocks require the Apple's 1.02 Mhz clock. The switches tell Transwarp what kind of cards are installed in your system. If you're not sure what speed your card operates at, try the high speed. If the card doesn't work properly then set the switch to the low speed. The overall speed of your Apple can be set through the configuration switches, or through software. For many programs, like games you will want to use your Apple at the 1.02 Mhz speed. Location $C074 (-16268) is used to control the Transwarp. If a 1 is placed in this location (POKE -16268,1 from BASIC) then the Transwarp will operate in its full speed mode. If a zero is placed in this location, then the Transwarp will operate at the normal Apple speed. If you have a program, or peripheral which needs a standard speed Apple, then the Transwarp can be optomized with a little programming by putting in the proper pokes.

With an adventure program I wrote the calculations are performed at top speed, but the graphics displays are slowed down. On a non-Transwarp Apple the game operates at the standard Apple speed. With a Transwarp the game calculates at high speed, but slows down for displays. Its all much easier than it sounds. If you want to disable your Transwarp it takes only one keystroke to disable it. The speed switch just makes it more versatile if a programmer decides to support it. Many newer programs which are speed dependent will automatically toggle the Transwarp's speed byte as needed.

Certain Apple peripherals which use the Apple's DMA line will not work properly with Transwarp in operation. These include the original Microsoft CP/M Softcard I, and Corvus Omninet Transporter. The Thirdware Fingerprint and Fingerprint Plus will work properly with printers and modems while the Transwarp is in operation, but if you want to use the button then you will have to shut off the Transwarp. Hitting the "ESC" while the Transwarp is loading will disable the Transwarp, change the Apple back to the 1.02 Mhz clock, and permit other DMA devices, like the Softcard and Omninet Transporter, to work properly. Alternately a POKE -16268,3 will also shut off the Transwarp, and permit DMA devices to work. As far as your Apple is concerned, the Transwarp will not even be plugged in, and you will have to turn off your Apple's power to reset the Transwarp back to its normal operating mode.

Surprisingly Transwarp does not take up any unused slots in your Apple. On the Apple IIe the Transwarp will work in slot 3, a slot normally unavailable. On the Apple II and Apple II Plus, if you plug the Transwarp into slot 0, it will emulate the 16K card which you would normally use in that slot. There is one very interesting undocumented feature for Apple II owners. Normally an Apple II Plus cannot use programs which access the AUX bank of memory, simply because there is no extended 80 column card available. However, with a Transwarp installed, that extra memory does exist. There are limitations though. Most programs will not recognize the extra memory, because they do not expect to find an extra 64K of memory on an Apple II Plus, and none of the other functions (80 columns, double HIRES graphics) are available. Still, if you have a Ramdrive program, or other programs designed to work with the IIe's extended 80 column card, with a little modification, you may be able to use them on your Apple II Plus.

The Transwarp is the only accelerator card available which will accelerate the extra 64K of RAM in the Apple's AUX page. It will not speed up any memory beyond that though. Any other Ramworks, or Ramfactor memory beyond the 64K on the Apple's motherboard, and 64K AUX memory will be accessed at the Apple's standard 1.02 Mhz clock rate. This is a minor limitation though, most programs which use extra memory beyond the first 128K use the memory for data storage, or as a RAMdisk, and that memory isn't used as often as the main memory.

Is Transwarp worth its $279 price tag? Here' an unsolicited quote from a satisfied customer: "Transwarp is great! I have replaced all of my other accelerators with it." The recommendation is from Steve Wozniak—the designer of the Apple.

WDC 65C816, 65C802, Western Design Center, 2166 East Brown Road, Mesa, AZ 85203; 602/962-4545.

Merlin Pro, Roger Wagner Publishing; 10761 Woodside Ave. Suite E, Santee, CA 92071; 619/562-3221.

Orca/M, The Byte Works, 800 Wagon Mound Drive NW, Albuquerque, NM 87120; 505/898-8183.

Product	Hardware required
Transwarp	Apple II, II Plus, or IIe
Ramworks III	Apple IIe
Ramfactor	Apple II, II Plus, or IIe
Battery Backup	Ramfactor or Ramworks expander
65C802 upgrade	any Apple, or 6502 computer
65C816 upgrade	Ramworks or Ramfactor

Warranty: 5 years

Distributor: Applied Engineering, P.O. Box 798, Carrollton, TX 75006; (214)/241-6060. ●

Computer discounts and liquidations

IBM Compatable 45 cps Daisywheel. Qume Sprint 3 with Serial Interface and Logic Seeking Bidirectional Proportional Printing at 300 or 1200 Baud - DTR or Xon Xoff. Has full keyboard so can Double as typewriter.

Guaranteed ..... $299.

CPM SOFTWARE LIQUIDATION

Big 3) Accounting Plus (One of the Best) — Buy General Ledger ..... $39.00 (Originally $495 – $595 per module)

Big 3) and we'll toss in A/R and A/P for only $29.95 each or pick your modules for $29.95 each – features password protection, audit trail, double entry, open item, error checking, etc.

Big 8) Buy the whole set G/L, A/R, A/P, Inventory, Payroll Point of Sale, Sales Order, Purchase Order for ..... $149.

These disks are in 96 TPI format but we can download to almost any format. We have about 80 sets of the Big 8 package and 60 of the Big 3.

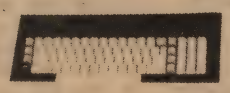
CPM 86 for IBM and Compatibles ..... $29.
CPM with Xerox 820 Bios and full manual $39.95
8" Floppy disks DSDD box of 10 ..... $19.95

HARDWARE LIQUIDATION

Shugart 400L 51/4 SS DD (2 in case) .. $89.
With Xerox 820 connector ..... $99.
Tec 51/4 SS DD for many different computers ..... $39.
Diablo 630 ECS ..... $695.
Diablo 630 API ..... $595.
Diablo 630 PPI ..... $495.
Diablo 1640-50 ..... $395-495
Motorola Monitor ..... $39.
Xerox 820-1 Single Board Computer complete, tested and guaranteed ..... $69.

Complete System 820-1 with 2 disk drives and keytronics keyboard $399.95

KEYTRONICS KEYBOARDS



IBM w/24 Funct. Keys ... $89 Keytronics Parallel ASCII .. $51.

POWER SUPPLIES

Aztec — 7½ X 6¼ X 2½
5V, 4.65A, 12V, 2A, 12V, 2.8A, 12V, .5A

Tiny Mite — 13 X 6 X 2½
5V, 20A ±5V, 1.5A ±12V, 5A, ±12V, 5A

Power Supplies Your Choice $39.95
Other assorted supplies available 14.95

Shipping and handling charged on all orders

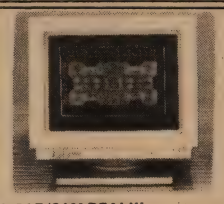
(213) 371-4428

CRAIG'S COMPUTERS

4500 Manhattan Beach Blvd., Lawndale, CA 90260

Pricing for quantities is subject to change without notice. CRAIG'S COMPUTERS buys & sells new & used surplus material and cannot guarantee availability.

F & W SPECIALISTS IN CAD/CAM, GRAPHICS, DESKTOP PUB



SPECIAL CAD/CAM DEAL!!!
Ikegami ultra high resolution monitor $1400.00 value. Viva Silver card compatable with Control Systems Artist One Card. Runs well with Autocad. Value of Viva Card is $995.00. The best price we've seen is $2395.00. We have packaged this together for a special combination price of only $995.00 COMPLETE!!! This package is ready to run on IBM XT and AT and compatables.

OTHER MONITOR SPECIALS.....
IBM enhanced color display (new) $449.00
19" Ikegami color monitor (used exc. cond. $399.00
13" Ikegami color monitor (new) $329.00
9" Panasonic monochrome open frame. . . $34.50
12" Panasonic monochrome open frame. . $27.50
15" Panasonic monochrome open frame. . $27.50

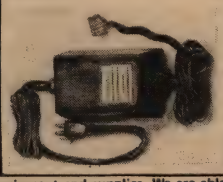
IBM SOFTWARE SPECIALS.....
IBM DOS 2.1 ..... $39.00
IBM Displaywrite 3 version 3.1 ..... $175.00
IBM Displaywrite 2 version 1.10 ..... $125.00
IBM PC Network Program $50.00
IBM PC Storyboard $75.00
IBM Data Edition $75.00
IBM BASIC $24.00
IBM BASIC 3.0 ..... $29.00
IBM AT Documentation Kit:
consists of:
guide to operations AT
Basic 3.0
power cord
diagnostics
intro book

all of the above $49.00

POWER SUPPLIES.....
Videotel (shown) +5v 1.8 amps -5v 50ma, +12v .5amps. Makes a dandy bench supply. . . . $10.95
Raytheon open frame switching supply 5v @ 10 amps +12, -12 @ 2amps $9.75
Panasonic 5v @ 3amps +12,—12 @ ½amp . . $8.95

IBM HARDWARE SPECIALS.....
5¼" double side double density floppy drives full height $49.00
1.2mb 5¼" half height floppy (new) . . . $149.00
IBM Printer cables $12.00
PCjr wireless keyboards $59.00
Prof. Graphics controller (list $2995.00). $1495.00
PC Translator unit (for networking) . . . $299.00
Network Short Distance Kit $15.00
AT 512kb memory expansion option . . . $249.00

PLOTTERS, DIGITIZERS, ETC.....
HP 7475A 6 color plotter $1395.00
HP 7470 1 color plotter $595.00
HP 7225 (GPIB) $495.00
Summagraphics MM 1201 digitizer tablet with stylus $295.00



We have The VIVA GOLD CARDS in stock ARTIST ONE compatability at a fraction of the price. Call for details.

ARTIST ONE is a registered trade mark of Control Systems.

The Computer Store Chain in Massachusetts went bust! We purchased their inventory of unused IBM equipment and supplies. We are able to pass along to you savings of up to 75%. Many items aren't listed. Call or write to us for your special requests. If you enjoy using, trading, or researching the hardware of science and technology, subscribe to our new magazine "The Science and Technology Collector". Get all the details in our latest 40 page issue. Send $3.00 for a sample copy. Your satisfaction is guaranteed! F & W Communications 241 E. Main Street Westborough, MA PO Box 509, 01581. Tel. (617) 366 0918

Fill The Hangar
continued from page 102

enemy aircraft. Each of these threats has distinctive flight characteristics and must be dealt with with appropriate countermeasures.

Once near the target, line up for a straight-in run, using the navigational cursor and long-range radar, reducing altitude to 5000 feet and commencing a shallow dive as the target approaches. Maneuver to place the sight on the target, arm the bombs and, when ready, press the bomb release, all the while watching for SAM and enemy defenders in the vicinity. If you do get into trouble, your best bet is to return to base for repairs. If that is not possible, bail out! You have a 50/50 chance of being rescued. If captured, you must wait for a prisoner exchange.

Also from MicroProse come six more simulations, each one distinctly different, ambitious and well-designed. Included are Spitfire Ace, the air war over Britain in which "so many owed so much to so few;" Nato Commander is a realistic missile and tank battlefield game in the heart of the European continent; Crusade in Europe refights the tank and air battles of WWII; and Decision In The Desert pits tanks against tanks, as General Rommel's desert corps strikes against General Patton's inexperienced but fiesty American armor.

Solo Flight allows beginner level flying experience, well-suited for amateurs and young people. There are two flight modes, "flying practice" and "mail run game." The first is self-explanatory; the second involves taking off and landing at different fields, picking up and dropping bags of mail, and trying to make good time against the various perils of wind, visibility, and cloud ceiling, not to mention the terrain. One gets to choose a setting from flat Kansas to mountainous Colorado, each more difficult than the last.

Hellcat Ace permits the pilot to fight his way through 15 key scenarios of the Pacific theatre during World War II, starting with the Flying Tigers under General Chennault in China, moving on to the outclassed defense of Pearl Harbor, then climbing the chain of islands from Wake through Midway, the Marianas, Leyte Gulf, Iwo Jima, Okinawa, and at last to the grand finale of the war.

Each copy of the program comes with a secret "authenticate code," to complicate the lives of software copiers. Once all the options have been selected, a number shows on the screen. The user is prompted to enter the corresponding code, without which the program will load, but none of the weaponry will be armed! Uniformed copiers will gnash their teeth.

The variety, sophistication, and inventiveness of simulators of all kinds will doubtless continue to fascinate. Realism and innovation sustain interest in the games over dozens of sessions. As memories increase and CPUs become faster and more complex, AI (artificial intelligence) will be incorporated with increasing versimilitude and orginality into microcomputer simulations, promising ever-more astonishing products.

Companies whose products are mentioned:

MicroSoft, 13221 S.E. 26th Street, Bellevue, WA 98005.

MicroProse Software, Hunt Valley, MD. (301-667-1151).

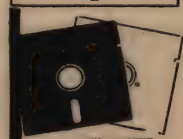
SubLogic, 713 Edgebrook Dr., Champaign, Ill., 61820. ●

BOSTON WHOLESALE'S AUTUMN SPECIALS!

DEALERS, SOFTWARE DEVELOPERS, VARS, AND GROUP BUYERS: Have you wondered where the discounters get their supplies from? Have you been unable to get good prices from you current suppliers? Boston Wholesale, one of the largest suppliers to computer stores and software developers, can help you offer competitive prices while maintaining high quality!

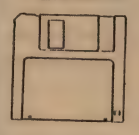
DS/DD DISKS: Premium quality, 5¼" with heavy 9.5 mil black jacket With write-protect tabs, hub ring, notched, 50% clipping level, meets or exceeds ALL ANSI specs! Guaranteed satisfaction! For the IBM-PC, compatibles, Apple II series, Commodore, Atari, etc. #UDX.
500-900 33¢ 1000-4000 29¢ 5000-9000 28.7¢ 10000+call

DS/DD UNNOTCHED DISKS: Same high quality disks as above, unnotched. #UNX
1000-4000 31¢ 5000-9000 30.7¢ 10000+call



DS/DD COLORED DISKS: Available in twelve colors, all notched, with hub ring, write protect tabs. #UC2-(color) Order light blue, dark blue, yellow, green, brown, red, lavendar, maroon, grey, white, magenta, orange. Mix and match colors for maximum discount in multiples of 25 per color!
500-900 62¢ 1000-4000 56¢ 5000-9000 53¢ 10000+call

GENERIC-BOXED DISKS: Perfect for point-of-sale display, plain white box. Available in standard 10s or 25s, with tyvek or paper sleeves, and come with generic labels, write-protect tabs. Add 1¢/disk for tyvek.
BOXES OF 10: 1000 disks 45¢ 5000 disks 43¢ 10000+ call
BOXES OF 25: 1000 disks 39¢ 5000 disks 38¢ 10000+ call

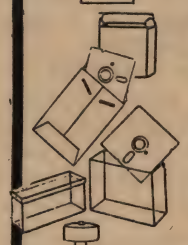


3 ½" DISKS: Certified, guaranteed 100% error-free. Poly bagged individually, packed in 100's.
Single side #BW3 100-900 $1.15 1000-9000 $.99 10000+ call
Double side #BW6 100-900 $1.27 1000-9000 $1.19 10000+ call

DISKS FOR THE IBM-AT: Certified, guaranteed 100% error free. #UATN
500/$1.50ea 1000/$1.39 5000/$1.31 10000+ call

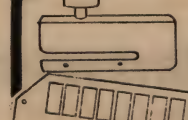
5¼" HEAD CLEANER PAK: "Wet" type, with cleaner solution and cleaner disk with 3 replacement inserts. Attractively peg packaged. #BWHCK
25-75 $2.25 100-400 $1.90 500-900 $1.85 1000+ call

5¼" SLEEVES: plain white lint-free sleeves, no printing. Bulk packed.
White Tyvek: 1000/$.045 4000/$.040 12,000+ call
White-wove paper: 1000/$.035 5000/$.030 10,000+ call



CARDBOARD DISK BOXES: for point-of-sale display of 5¼" diskettes. Plain white unprinted.
10-BOX (D-BOX): 275/$.18 1100/$.14 5500/$.11
25-BOX (J-BOX): 200/$.20 1000/$.15 5000/$.12

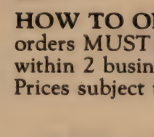
CARDBOARD DISKETTE MAILERS: Virtually bend-proof, fits 2 disks plus a letter in a 6x8" mailer. Costs only 56 cents to mail (avoids USPS surcharge for odd-size mail). Bulk packed. #BWUP
125 34¢ 500 24¢ 1000 21¢ 5000+ call



LIBRARY STORAGE CASES: Holds 10-12 disks, clear see-thru plastic. Removeable top. Bulk packed. #BWF10
your cost 100/70¢ 500/53¢ 1000+ call

DISKETTE NOTCHER: For Apple & Commodore disks, allows access to 2nd side of disk. Attractively boxed. #BWNN1
10/$5.90ea 50/$3.90 100/$3.60 200+ call

EXTENDED 80 COLUMN CARD FOR THE APPLE IIe +64K RAM: Functions just like the Apple Extended 80 Column Card, 100% compatible. #BW80COLR
10/$29ea 50/$26 100+ call



GENERIC DISK LABELS: Ten labels on a 5x5" sheet, fits inside standard disk boxes. Black printing on a white background. Price is per sheet of 10 #BWGS10
100-900 sheets 10¢ 1000-9000 8¢ 10000+ 6¢

HOW TO ORDER: Order by phone or mail, pay by MC-Visa-COD, or send check with order, min order $100, FOB Boston. All orders MUST include daytime phone and STREET address. Sales hours: Monday-Friday 9:00 am to 5:00 pm. All orders shipped within 2 business days after receipt. These prices superceed all previous prices, and are in effect until our next price list is published. Prices subject to change. Boston Wholesale sells wholesale only.

BOSTON WHOLESALE

BOX 462
SOMERVILLE, MA 02143-0462 (617)868-5523

The Comal Corner

by Frank and Melody Tymon

In our last episode we left our readers waiting in eager anticipation to watch the antics of Melody as she darts across the screen. The static display of her fatal beauty (her words) was provided to console them in the interim. Well, we are back as promised, and Melody shall indeed dart here and yon on the screen. Eh, as soon as we figure out where yon is.

In addition we promised that the handsome (so he says) image of the senior author would likewise decorate your display. And so shall it be!

However, in this episode we go beyond such frivolity and introduce some new and important capability of the COMAL language. We re-establish the ability to generate the images, using DATA statements. We introduce the concept of motion, and provide the ability to move an image using the joystick. And we also add multiple image capability.

Enough to keep us busy for a bit! So lets press on and get some work done here!

First we re-introduce the original routine used to generate sprite-usable numbers from DATA statement drawings. We have modified the program slightly to make it easier to use. The basic routines, however, are unchanged. The program is still composed of two major elements—the actual program and the DATA statements containing the picture. The picture must, as before, be generated in the DATA statements before the program is run.

Actually you pre-generate any number of DATA pictures and save them with a LIST instruction for subsequent use. When you are ready to use a picture merely delete the present DATA statements and MERGE the new picture. Then run the program to generate a file on disk for subsequent use by a sprite-generating program, to be discussed later.

Once you have generated the output for Melody, delete the DATA statements, and replace them with the happy image of the senior author, following. Run the program

continued on page 210

Artificial Intelligence continued from page 101

their data structures are typically enormous, requiring tens or hundreds of megabytes of storage. AI processors must therefore have the ability to address large amounts of both physical and virtual memory.

While conventional programs tend to step through large blocks of instructions sequentially, frequently looping within a block (a property called "locality of reference"), AI programs exhibit frequent branching, jumping through widely spaced parts of the program unpredictably, as new associations and connections are generated. The computing "engine" must therefore provide the ability to quickly skip from one memory location to another across the entire address range. This function is supported by "linear" memory models, in which the address space is a continuous, "flat" array, with no internal divisions to impede long jumps. Since AI programs require frequent reference to main memory, performance is determined largely by the speed of fetching new instruction sequences and data from memory.

The size and complexity of AI processes require an amount of computing power far beyond the range of many machines. Dedicated symbolic processors address this challenge by supporting key AI procedures with specialized hardware architectures. For example, some symbolic systems provide extra-wide data buses to move and process tags along with data words.

High-end, general-purpose computing systems can make up for a lack of specialized architectural features with raw performance, achieving clock speeds and instruction-processing rates far greater than dedicated systems. Where the use of tags is necessary, as in interpreted Lisp programs, general-purpose systems can employ "virtual" tags, implemented in software. Fully developed, compilable applications do away with tags altogether, and in such circumstances, fast general-purpose systems substantially outperform dedicated machines. General-purpose systems have a number of other advantages, to be discussed up ahead.

AI computers include development systems, used by researchers to develop AI programming environments and application tools, along with delivery systems, supplied to the end user for executing applications. Development systems can be anything from a supercomputer to a single-user microcomputer. As in many other technical disciplines, price-to-performance ratios tend to favor the workstation as the ultimate development system for most users. Delivery systems also range from personal computers to supercomputers. Price and versatility argue for the personal computer as the ideal vehicle, but performance and capacity requirements all but rule out the current crop of 8- and 16-bit machines for most AI applications.

The breadth of current and potential AI applications is extensive. Advanced robotics and process control systems are placing increasing emphasis on AI technology. AI is an essential part of machine vision, speech recognition and speech generation systems. Natural language processing, still very much experimental, should eventually produce computers able to "understand" language as used by human beings (as opposed to the fixed commands commonly used in current man-machine communication).

All of these applications require the ability to make sophisticated inferences based on a complex mix of inputs and a variety of stored information. So a machine vision system might employ information on such things as edges and shading to pick out various objects in a scene. Similarly, a speech recognition system might use information on phonology, semantics and syntax to identify individual spoken words.

Knowledge-based systems, sometimes called "expert

continued on page 188

FOR THOSE WHO KNOW.

DISK DRIVES ALL GUARANTEED

MPI DISK DRIVES

$39 ea MODEL 52SA IBM COMPATIBLE

DS/DD 40 TRK-AS SHOWN-USED GUARANTEED 90 DAYS

THESE DRIVES ARE REMOVED FROM OPERATING MACHINES AND TESTED ON A COMPUTER AT OUR FACILITY BEFORE SHIPPING.

CONTROL DATA (CDC) $63
MDL 9409-FULL HEIGHT-DS/DD 40 TRK-360K-USED-TESTED

SHUGART $89
MDL SA-465-HALF-HEIGHT-96TPI HIGH DENSITY-NEW

FUJITSU $93
MDL M2551A-360K-HALF-HEIGHT

TEAC $95
MDL 55BV-360K-HALF-HEIGHT DS/DD-40 TRK

TANDON $84.95
MDL TM50-2-360K-HALF-HEIGHT

NEC PRINTERS

SPINWRITERS UNUSED

HIGH QUALITY — SUPERB PRINTING!

BOTH MODELS HAVE DIABLO COMPATIBLE SERIAL INTERFACES

mdl 3515 - $475

mdl 5515 - $665

PRINT CABLE IS INCLUDED FREE!

GENERIC SOFTWARE, INC. CADD

THIS IS A COMPLETE $99 INCLUDES PLOTTER DRIVERS TWO-DIMENSIONAL PACKAGE THAT WE FEEL IS ONE OF THE FINEST AVAILABLE. YOU SIMPLY WON'T BELIEVE WHAT THIS SYSTEM CAN DO. CALL US FOR FULL DETAILS!

GENERIC DOT-PLOT
GENERIC AUTO-CONVERT 24.95 ea

HIGHEST QUALITY PARTS

AT CASE	$99	MONOCHROME GRAPHICS CARD	$89
XT CASE(AT STYLE)	$49	EGA CARD	$299
DUAL DISK DRIVE CABINET	$39	RGB CARD	$89
200 W POWER SUPPLY	$99	MOTHERBOARD (PC/XT)	$99
150 W POWER SUPPLY	$70	MOTHERBOARD (PC/AT)	$489
ASTEC POWER SUPPLY	$19.95	256K RAM CHIPS	$3.25ea
AT STYLE KEYBOARD	$80	8087 COPROCESSOR(5MHZ)	$125
SAKATA MONO. MONITOR 1000	$129	80287 COPROCESSOR(6MHZ)	$199
SAKATA MONO. MONITOR 1500	$145	80287 COPROCESSOR(8MHZ)	$294
SAKATA COLOR/MONO MONITOR	$325	RS232C BREAKOUT BOX	$58

Carlisle Computer

CALL TODAY (617) 369-1175

26 Oak Knoll Road Carlisle, MA 01741

ASK FOR OUR COMPLETE CATALOG!

MasterCard VISA

Sense and Control the Environment in Real-Time.

The "Parallel Companion" Plug-In Board for the PC-XT or SBC

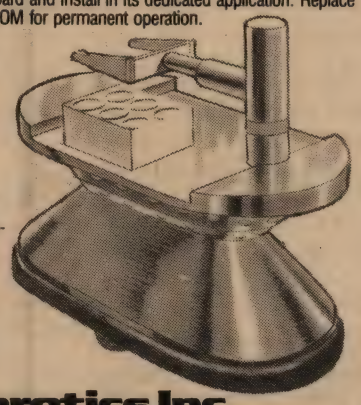
Gain complete control of your I/O and Data Processing (in Real-Time), free from unpredictable system interrupts. Down load and run programs from MS DOS PC DOS files. Pass data and control parameters from programs running in the PC to programs running in the Parallel Companion. Use multiple boards running concurrently, for parallel processor operation.

- 4 eight-bit parallel C-MOS-TTL drive ports.
- 2 IC sockets may be jumper programmed to use 65C21, 65C24, 65C22 (PIA).
- 2 RS232 Ports with software selectable baud rates (50 to 38,400).
- 1 or 2 Serial bidirectional I/O Ports.
- 65C102 (6502) 3 or 4 MHZ clock.
- Jumper selectable base address in 64K increments for multiple board operation.
- 4 multiplying 8 or 12 bit D/A converters.
- 2 or 4 counter timers.
- Up to 64K MIX of RAM and EPROM.
- Battery back-up C-MOS RAM.
- All C-MOS design for low power operation (may be run on battery power.
- User-friendly I/O utility and application programs, on disk.
- 12 Strobe outputs.
- EPROM Monitor and drive utility subroutines.

Model PCRT-102 Parallel Companion base price is $495.00. For information on optional features and related products call or write today.

Single Board Use

Down load programs into the Parallel Companion. The battery back-up RAM, preserves programs and data when power is turned off. Remove the board and install in its dedicated application. Replace RAM with EPROM for permanent operation.



The Parallel Companion as used in the Cyber III Autonomous Vehicle.

Cyberotics Inc.

P.O. Box 29, 99 West St., Medfield, MA 02052 (617) 359-3344

DAVID AND GOLIATH COMPUTERS introduces our new BUSSTATION™ PC EXPANSION SYSTEM

DAVID AND GOLIATH COMPUTERS developed the **BUSSTATION™ PC Expansion System** in response to hundreds of requests from frustrated IBM PC owners who have outgrown their five available slots. Now you don't have to spend $700 to over $1,000 to expand your system.

Motherboard: Seven full length slots with card supports and screw-down brackets.
Power Supply: 135 watts with built-in cooling fan (150 watt power supply available for an additional $20.00).
Case: Unlike IBM's "you shouldn't be opening this anyway" case, ours pops open with a push on its two push-button latches, stays open with its locking hinge, and latches tight when closed.
Drive Provisions: Mounting brackets and power supply leads to accommodate up to four additional floppy or hard drives or tape streamer. Blank face plates provided for flexibility of configuration. Complete direct memory access (DMA) capabilities permitting ram boards and high speed drive controllers to reside in the **BUSSTATION™**.
Compatibility: Complete slot and hardware compatibility with IBM™ and all other 100% IBM hardware compatible computers. All necessary cabling and interface boards included.

IBM PC is a trademark of International Business Machines.
BusStation PC Expansion System is a trademark of David & Goliath Computers

Clever engineering allows **BUSSTATION** to be the expansion system you've been waiting for without cutting corners, skimping on features or charging an outrageous price. It's all here — hardware compatibility, an additional power supply and cooling fan, **plus** room for four additional drives.
Warranty: 90 days on parts and labor.

BUSSTATION™ PC Expansion System - **$399.95**
Shipping and Insurance - 15.00

Mail check or money order to
DAVID AND GOLIATH COMPUTERS
A Division of American Software Club, Inc.
80 Topstone Road, West Redding, CT 06896
203-431-4968

BUSSTATION
DAVID AND GOLIATH

Artificial Intelligence continued from page 186

systems," form perhaps the largest AI application set to date. Such systems draw from a body of facts, heuristic rules and observations (a "knowledge base") to reason about problems in specific areas and generate solutions and explanations. Some systems encode the expertise of one or a few human specialists to address a narrowly defined set of problems. Some notable examples are the *Prospector* system, used in mineral exploration; *Internist-1*, a medical program that has proved successful in diagnosing certain illnesses; and *Delta/Cats-1*, used by General Electric to guide diesel locomotive maintenance.

Expert systems are among the first AI technologies to reach the marketplace. Their early success has led to a secondary market for expert system shells—tools that allow software developers to build knowledge bases and create expert systems for specific end-user applications.

In a broad sense, AI can be applied to nearly all problem-solving endeavors. Just as important, the innovations pioneered by AI will eventually be absorbed by conventional computing.

Despite its tremendous potential, the AI market is currently constrained by the high cost and inflexibility of dedicated hardware platforms for AI applications. Dedicated symbolic processors are expensive (often $100,000 or more)—too costly for widespread use. In addition, dedicated machines fail to support standard non-AI programming languages, operating systems, and applications. Users are forced to acquire several pieces of equipment, one for AI and a second for conventional tasks such as office automation. Still another may be required for technical non-AI applications such as computer-aided engineering (CAE). AI application software is often non-transferrable, even among different symbolic processors.

Vendors of symbolic processors are moving to mitigate some of these problems by developing add-on hardware support for standard languages such as Fortran and C, as well as operating systems such as Unix. Such interfaces add cost, however, making the hardware even less affordable for the majority of potential users.

The result is that hardware adequate for AI computation is not affordable, and what is affordable is not adequate. These conditions have combined to severely restrict the sale of AI hardware. The absence of a substantial hardware base has in turn inhibited independent software vendors, who hesitate to invest resources on programs confined to a narrow range of hardware systems. And the lack of a sufficient breadth of available software applications stifles the overall AI market. Maturation of the market will come about only with the availability of low-cost, industry-standard AI computers.

Current estimates place 1985 AI computer sales at roughly $364 million, growing to $1.5 billion by 1990. These estimates are based on the price of today's dedicated systems—from $50,000 to $100,000 or more—and represent only a fraction of the growth possible with affordable general-purpose systems.

The increase of AI technology in the marketplace requires the seamless integration of commercial computing and symbolic computing. Symbolic computing, in other words, must migrate to general-purpose hardware. Combining the high-performance and memory-access requirements of symbolic computing with industry-standard processor architectures and widespread software support has been the chief obstacle to achieving this goal. The introduction of Intel's 80386 32-bit microprocessor clears that hurdle.

The 80386 provides performance and a memory-addressing range unmatched among microprocessors. At the same time, the 80386 offers access to the industry's largest software base—more than $6 billion worth of programs developed for Intel's 8086 family, which includes the 8086 and 80286 processors.

General-purpose 80386-based systems will offer users a "single footprint" for both AI and conventional computing functions. Such systems can cut the price of AI development and end-use considerably, from more than $100,000 in some cases to $10,000 or less, and will stimulate software development by supporting standards.

The 80386 provides all of the fundamental features required by AI systems. Complete sets of software development aids for the 80386-based AI applications are forthcoming from a number of leading ISVs. Overall, the 80386 substantially reduces the cost and increases the versatility of both AI development systems and delivery vehicles.

With sustained performances of 5000 to 9000 *dhrystones* per second (a standard computing benchmark)—four to six times the performance of a VAX 11/790 superminicomputer—the 80386 is among the fastest commercial microprocessors ever developed. This performance level greatly surpasses dedicated symbolic systems, especially when executing compiled programs. (Fully developed and debugged AI applications often can be compiled.)

The high throughput of the 80286 results from an innovative architecture and advanced chip fabrication technology. A parallel-processing technique known as pipelining allows the processor to execute as many as four different instruction steps simultaneously. The chip is available with high clock speeds of 16 and 20 megahertz. The 80386 bus has a throughput of 32 megabytes per second (at 26 MHz)—the highest for any microprocessor. Intel's CHMOS III chip processing technology enables high speed while reducing power consumption.

AI is among the most memory-intensive of all computer technologies, demanding

continued on page 189

Handicapper!

HORSE RACES

Thoroughbred factors include speed, class, past performance, post position, jockey record, beaten favorite and weight. Harness factors include speed, class, past performance, post position, driver record, breaking tendencies, beaten favorite and parking out. Greyhound factors include speed, past performance, favorite box, trainer record, maneuvering ability, beaten favorite and break speed.

Now use your computer to improve your performance at the track! Separate programs for thoroughbreds, harness horses and greyhounds will rank the horses or dogs in each race. Data entry is quick and easy. Handicap a race in minutes and a whole card in less than an hour! All the information you need is readily available from the Racing Form, harness or dog track program. We even provide a chart showing you where to find it!

DOG RACES

HARNESS RACES

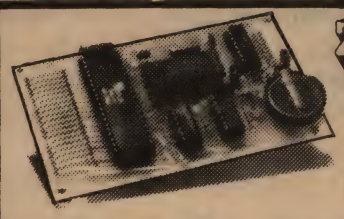
We can't guarantee a winner every time. But if you use The Handicapper, follow our advice and wager wisely, you'll be a smarter and richer bettor. Available for IBM/Sanyo, Apple II Series, Commodore 64, TRS-80 Color, Model 100, TI99/4A. Price and availability information below. Specify system when ordering. VISA/MC welcome.

CALL TOLL FREE (ORDERS ONLY)

800-628-2828 Ext. 850

Program	IBM/SANYO	APPLE	COM 64	CoCo	TI99	MOD 100
Thoroughbred	$49.95	$49.95	$39.95	$39.95	$39.95	$39.95
Harness	$49.95	$49.95	$39.95	$39.95	$39.95	$39.95
Greyhound	$49.95	$49.95	$39.95	$39.95	N/A	N/A
Any Two	$79.95	$79.95	$59.95	$59.95	$59.95	$59.95
All Three	$99.95	$99.95	$79.95	$79.95	N/A	N/A

Federal Hill Software 8134 Scotts Level Rd. Baltimore, Md. 21208 (301) 521-4886



Ztime-I

CALENDAR/CLOCK

$69 KIT

NOW WITH FILE DATE STAMPING!

- Works with any Z-80 based computer.
- Currently being used in Ampro, Kaypro 2, 4 & 10, Morrow, Northstar, Osborne, Xerox, Zorba and many other computers.
- Piggybacks in Z80 socket.
- Uses National MM58167 clock chip, as featured in May '82 Byte.
- Battery backup keeps time with CPU power off!
- Optional software is available for file date stamping, screen time displays, etc.
- Specify computer type when ordering.
- Packages available:

Fully assembled and tested	$99.
Complete kit	$69.
Bare board and software	$29.
UPS ground shipping	$ 3.

MASTERCARD, VISA, PERSONAL CHECKS, MONEY ORDERS & C.O.D.'S ACCEPTED.

N.Y. STATE RESIDENTS ADD 8% SALES TAX

KCT KENMORE COMPUTER TECHNOLOGIES

P.O. Box 635, Kenmore, New York 14217 (716) 877-0617

Artificial Intelligence continued from page 188

rapid access to vast amounts of storage. The 80386 sets new standards for memory addressability, supporting a total of 4 gigabytes main memory, 4 gigabytes of linear address space and 64 terabytes (246 bytes) virtual memory, enabling the chip to host even the largest programs and data structures.

Fast access to memory is provided by the processor's high-speed bus and an on-chip memory management unit (MMU). The MMU incorporates address translation caches (high-speed on-chip memory). Because the MMU is on-chip, address translation can be performed in parallel with other processor activities. The high-speed bus and integrated address translation mechanism combine to permit an unprecedented two clock-cycle access to off-chip high-speed memory. An additional advantage of an on-chip MMU is software portability, because all 80386 programs are necessarily written for the same MMU. Other processors supporting a variety of incompatible off-chip MMUs offer no such guarantee.

The slower buses and off-chip MMUs of competing general-purpose processors limit off-chip memory access to four clocks or more, and this exacts a heavy performance penalty on AI applications. In an effort to improve memory access, several of these processors feature on-chip code and data caches. The assumption is that the processor is likely to address a given block of data or instructions a number of times in succession before referring to another block. By loading it into the cache, the block is placed on the chip within easy reach of the processor; only when a new block is referenced does the processor need to go off-chip for code or data.

In practice, however, these assumptions are not borne out. First of all, current on-chip caches are very small (typically 256 bytes). Most code blocks do not fit in such small caches; nor are suitably small data blocks liable to be referenced many times in succession. This is especially true in AI programs, which exhibit very poor locality of reference, as mentioned earlier. As a result, the processors are forced to go off-chip for nearly every memory access—rendering the cache useless—and are impeded by their low bus throughput. Performance in AI applications suffers measurably.

Instead of opting for ineffectively small on-chip code and data caches, Intel's approach with the 80386 maximizes bus speed for fast access to off-chip caches. Such caches can be arbitrarily large (up to 4 gigabytes), enabling true performance benefits.

The 80386 also provides on-chip MMU support for a virtual memory scheme called paging. Virtual memory allows the processor to quickly swap information between main memory and secondary storage devices such as hard disks, thus permitting the efficient use of large programs and data structures that exceed the size of the physical memory itself. With its on-chip MMU and integrated address translation cache, paging on the 80386 can be performed rapidly—a must for AI applications.

While the two-clock, nonpipelined bus cycle of the 80386 is ideal for high-speed cache memory, a three-clock, pipelined bus cycle can be used with slower dynamic RAM (DRAM) memories—without adding wait-states that slow microprocessor throughput. The combination of pipelined and nonpipelined bus cycles is a unique feature that enables system designers to take maximum advantage of both caches and less expensive DRAMS.

The 80386 also supports the linear memory architecture required by AI programs, as outlined earlier, permitting system memory to be treated as a flat unstructured array up to 4 gigabytes long. With a single "jump on condition" instruction, the processor can immediately reference any memory location through a 32-bit offset. (An offset is a number that, added to the current memory address, specifies a new location to be referenced. A 32-bit offset means a single jump can cover the entire 4-gigabyte address range.)

The 80386 provides a flexible set of general-purpose

continued on page 215

640K 8.0 MHz Turbo XT $880

ONE MEGAbyte 8.0 MHz Turbo 286 $1,500

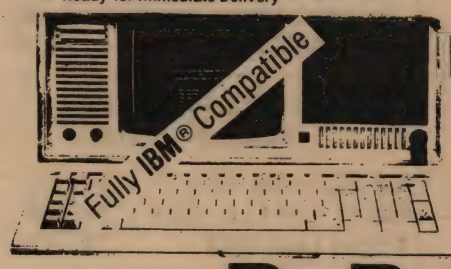
Includes:
- One High Resolution TTL Monitor (720x350)
- 720x348 Hercules Emulation Card/w Parallel Port
- High Performance 16 Bit 8088-2 Microprocessor
- Dual Speed 4.77 and 8.0 MHz, Keyboard Switchable Runs 68% Faster
- Four Layer Motherboard for Superior Performance
- 640K RAM on Board
- 8087 Socket Installed on Board
- 6 EPROM Sockets Installed on Board
- Fully IBM Compatible XT BIOS Installed
- 8 Fully IBM Compatible Expansion Slots
- Power-on Self-testing of System Components
- 150-Watt Power Supply with Four Cables
- Keyboard w/LED Indicator and Enlarged Return and Shift Keys
- Multi I/O Card: Controls Two Floppy Disk Drives Parallel Port/Game Port/Serial Port, 2nd Optional, Real-time Clock/Calendar/w Battery Backup
- Two DS/DD Half-height Direct Driven 360k Drives
- Speaker for Audio or Music Use
- High Quality Metal Case
- Runs All Software Written for IBM
- Operates MS-DOS, PC-DOS, and GW Basic
- Optional Internal/External Modem
- Optional Color Systems/w CGA Card
- RAM Disk and Printer Spooler Software Included
- Ready forTape Backup Interface
- Ready for NETWORK Interface
- Optional 20-30 MB Hard Disk Drive
- Optional EGA Systems
- Operating Manuals for Monitor, Keyboard, Motherboard, MGP Card, and Multi I/O Card
- User's Manual for the System
- Fully Set-up and Tested in America
- 30 Days Money Back Guaranty
- One Year Fully Warranted
- Ready for Immediate Delivery

XT Systems W/20MB & One Floppy Seagate ST225/W D Controller	$1,250
XT Systems W/30 MB & One Floppy Seagate ST238 /W D Controller	$1,350
286 Systems W/20 MB Seagate ST4026	$2,000
286 Systems W/30 MB Seagate ST4038	$2,100
286 Systems W/40 MB Seagate ST4051	$2,200

*** Color Systems with CGA Card ***
Enhanced Color Graphics with EGA Card

Printers, Modems, Joysticks, Software, Cables, Monitors, AB Switches, Diskettes, Watson, Ram Chips, Digitizers, UPS, Tape Backups, Add-On Cards, Mouse System, Eprom Writers, 5151 Keyboards, Surge Protectors, Diskette Holders, D-Link Network, 8087-2/80287-3, Keyboard Drawers, Light Pens, PC Tools

Includes:
- One High Resolution TTL Monitor (720x350)
- 720x348 Hercules Emulation Card/w Parallel Port
- Fully IBM Compatible BIOS Installed
- 80286 Running at Dual Speed 6 and 8 MHz
- Runs All Software Written for IBM
- Operates MS-DOS, PC-DOS, GW Basic, and Xenix
- One Megabyte RAM on Board
- 80287 Socket Installed on Board
- 8 Expansion Slots: Six 16 Bit/Two 8 Bit
- Combined Hard Disk/Floppy Disk Controller — WD Controls Two Hard Disk Drives and Two Floppies
- Keyboard W/LEDs and Enlarged Return/Shift Keys
- 200-Watt Power Supply with Four Cables
- Power-on Self-testing of System Components
- One 1.2 MB High Density TEAC Floppy Drive
- Parallel/Serial Card
- Lockable Case To Prevent Unauthorized Access
- Real-time Clock & Calendar with Battery Backup
- Speaker for Audio or Music Use
- Hardware Reset Button
- Power and Hard Disk Indicator Lights
- Optional EGA Systems
- Optional "0" Wait State
- Optional 10 MHz Operation
- Ready for 20-30-40 Megabyte Hard Disk Drives
- Optional 360k Floppy Drive
- Optional Color Systems/w CGA Card
- RAM Disk and Printer Spooler Software Included
- Ready for Tape Backup Interface
- Ready for NETWORK Interface
- Operating Manuals for Monitor, Motherboard, Keyboard, MGP Card, and Parellel/Serial Card
- User's Manual for the System
- Fully Set-up and Tested in America
- 30 Days Money Back Guaranty
- One Year Fully Warranted
- Ready for Immediate Delivery



PcPro TURBO XT PORTABLE.....$980
- Fully Compatible • 4 Layer 8MHz Turbo Board • 640k on Board
- 8087 Socket Installed • 8 Expansion Slots • Two 360K Drives
- 2 Parallel • Serial • Game Port • Clock / Calendar • MGP Card
- XT Keyboard • 9" TTL Monitor • Runs MS-DOS, PC-DOS, GW Basic

WITH 20MB HARD DISK/ONE FLOPPY $1,350

PcPro Systems, Inc.

New York
43 W. 33rd St., 2nd Fl.
New York, N.Y. 10001
(212) 239-0625

Los Angeles
7641 Barb. Lane
La Palma, CA 90623
(213) 923-5052

VISA/MC/AMEX

Open 7 days

30-Day Total Satisfaction Guarantee
Any item bought from PcPro may be returned within 30 days from the date it was shipped for a full refund of your purchase price. Returned items must be as new, not modified or damaged, with all warranty cards, manuals, and in its original packaging. Returned items must be shipped prepaid and insured, and must bear a PcPro's Credit Return Authorization (CRA) on the shipping label. Call PcPro's Customer Support Department for a CRA. No credits issued after 30 days from date of shipment.
This warranty does not cover accidental damage, misuse, misapplication, or damage resulting from modification or service by anyone other than an authorized PcPro Systems Service Center.
This warranty is valid upon delivery of products.

Limited Warranty
PcPro Systems Inc. warrants its products to perform in accordance with published specifications for a period of twelve calendar months from the date of purchase by the end user or 365 days from the date the product was shipped to the purchaser.
During the said period PcPro Systems Inc. at its option will repair or replace products that prove to be defective at no charge, provided the product is returned to PcPro Systems, Inc. Call PcPro for an authorized return number (RMA). Please include a brief description of problems encountered with the product. Repaired products will be returned freight prepaid.

IBM, AT, XT are registered trademarks of International Business Machines, Inc.
Hercules is a registered trademark of Hercules Inc.

Silver Box
continued from page 88

write a correct patch, which I call F patch, following the instruction below.

The F Patch Installation

1. Change IO.SYS from hidden file to a visible file using debug on your freshly formatted system disk with the operating system known as the MSDOS V.11#1.02[VB]. Type:

[DEBUG] then [L100 0 5 1] providing you have your system copy in the "A" drive. Proceed by typing [E10B]. (You should type <ret>, the CR key, every time when you see closing square bracket.) Then:

[20 sp sp]. The two spaces are used just to make sure you are still on the right track. The last carriage return should put you back to the DEBUG prompt. After verifying the prompt, type:

[W100 0 5 1]. If you mistype and hit the CR, you should expect to reformat the disk, since you are dealing with the File Directory.

If you get the prompt back, type:

[Q]. This will put you back to the MSDOS prompt, "A>".

2. Next is to get the IO.SYS loaded into your work memory. Type:

[DEBUG A:IO.SYS]. When you get the prompt after disk operations, type as follows:

[A2A26]

[CMP DX,B800] This instruction checks the amount of working memory you have in your computer.

[JBE 2A2F] if the test result was "below" or "equal," the CPU jumps to location 2A2FH and bypasses the next instruction which limits the top memory address to B800H. If the last memory address in the DX is beyond the B800H, the video RAM boundary, it does not jump over the next instruction, rather, it executes it.

[MOV DX,B800] loads register DX with the maximum limit address whatever was the original top memory address in the DX register. This prevents the system placing the high memory portion of the COMMAND.COM in the VRAM area. Other codes are similar in function but wrote differently than the Megados patch.

[XOR BX,BX] if the top memory address in the DX register is not beyond B800H, you land in here with the content of the DX register intact. This instruction clears the content of the BX register to all zeroes. Similarly:

[XOR BP,BP] clears the BP register which is used to set the page address of the CRTC, the 68B45, the CRT Controller. This instructs the CRTC where to look for the video data it displays.

[SUB DX,0010] allows the system a work area of 256 bytes. Remember that this is a segment address. The segment address is 10H times the normal address number. So, 10H * 10H is 16 times 16 in decimal, and the product is 256.

[JMP 2A5E] The job to set the system RAM value is finshed. This is a jump to continue the initialization. Rest of the instruction from 2A38H to 2A5DH can be cleared if you wish, but there is no jumps or calls to this area from other locations and you can leave them as they are. Or, if you wish, you can fill in with some additional patches. Finish the job by typing [W] and [Q].

The above F patch assumes that you have at least 256K. I tested the patch with the 256K and 768K memory size in Sanyo MBC-555 and it performed fine, but I did not test it with the 128K memory.

The "Missing Link" Patch

If you have the "Missing Link" board in your system and you wanted to make your own patches and improvements(?), you should not forget to write to location B000:-0000H. This will activate the additional memory. Otherwise you will find the size of memory you get is just 256K!

This job can be done in several ways. One problem is where to put it. There is a left over area right after the F patch described above, from location 2A38H to 2A5DH, a total of 38 bytes. The IO.SYS jumps to location 2AB0H when first loaded. Here, you can place a call to the patched routine at 2A38H, or to the patch area of the IO.SYS. Since this initializing routine is used only once, you may even place it in the uninitialized portion of the system work area, such as the space starting at 180H. The area may be written over later, but that is just fine. You never need it again.

The "Missing Link" patch is the most versatile and elaborate among other patches. It uses the IO.SYS patch area starting at 200H. The only thing I do not consider kindly is the fact that it displays total RAM area in a false expression. That is, 736K of RAM space is indicated as "753K." The indication "753K" means 753*1024 = 771,072 bytes as my computer dictionary explains. Actually, you have 753,664 bytes.

When I first saw the figure, I believed it to be 771,072 bytes and it acted as a seed of confusion in already feeble mind of mine. I spent a good part of a day to figure out how the Tampa Digital got the 17 kilobytes of additional memory beyond the VRAM area and I could not find it out. Then I realized "753K" meant not 753K but 736K and 753,664 bytes. It took me a couple of weeks to recover completely from this confusion. Somehow, I memorized the miracle number 753K so deeply and was feeling difficult to discard the record completely like my 96tpi drive writing in the 360K mode. It creates some ghost tracks and the old records may pop up unexpectedly when you put the disk in other 96tpi drives.

The "AT" Drive

A couple of months ago I briefly touched on the subject of the "AT" drive, a DSHD 96tpi drive which has the formatted capacity of 1,205,220 bytes. The drive makers in Japan called this format "High Density," or "HD" in short. This is a 96tpi to 80 track drive which has three characteristics different from the ordinary 96tpi drives.

Number One is the turning speed of the spindle. The ordinary drive has 300 revolutions per minute, while this one has 360RPM in the AT mode but it is switchable to 300RPM if you want to read the 360K disk or use the 700K/800K 96tpi disks. The Chinon F-506L drive I purchased recently has a good selection of option jumpers. The pin 2 is the Mode Sect line. You can set either high or low signals here by arranging the option jumpers to select either mode, AT or normal.

The Difference Number Two, is the rate of data transfer. In AT mode a faster data transfer rate is used. The normal 5.25" drives use 250KBPS (BPS is bit-per-second) in double density operation. In AT mode the transfer rate is 500KBPS. This speeds up the disk access time since the read-write operation

continued on next page

Disk Drive Repair Inc.
Specializing in Winchester and Floppy Drives

- Low Cost
- 120 Day Warranty
- 48 Hour Turnaround Available
- Clean Room for Hard Drives

We service these 5¼", 8" and 14" Winchester Drives . . . and more!
• IMI • CMI • Quantum • Microscience • Priam • Miniscribe • Seagate
• Tandon • Rodime • Micropolis • Maxtor • Shugart • Fujitsu • Marksman

We service all 3½", 5¼", 8" Floppy Drives, and Bernoulli Drives.

Servo-writing available on **CMI 6000** and **Quantum 500** series drives.

Call for Pricing and Brochure (503) 626-7104

ADDRESS: 8220 S.W. Nimbus, Beaverton, OR 97005

64K RAM Chips .95
256K RAM Chips 2.75

20 MBYTE Hard Drives
CONTROLLER,CARD AND CABLES
$399
EXTERNAL $525.00

TURBO MOTHER BOARDS
* Switchable 4.77/8 MHz
* Controls four floppys
* 6 Expansion Slots
* Clock and Battery
* 640k Ram, 64 ROM
* Optional 8087-2
* TWO serial Ports
$ 245

LSI MARKETING
MICHIGAN (313) 553-7800
NATIONAL 1-800-231-8088

STB SYSTEMS
EGA Plus Adapter 256 K
$ 250.00

Monitors
TTL ..... $ 90
RGB ..... $ 280
EGA ..... $ 485
Composite
Tilt Swivel..... $ 80

V20 - 8088 ....$ 12

Control Electronics MODEMS :
* 300/1200 Baud $ 149
* Hayes Compatible

CABLES
Printer Parallel..7.50
Floppy disk cable 6.00
Winchester cable..6.50
Modem Cable.....9.00

Control Electronics Switch Boxes
AB Switch BOX 29.95
ABDE Switch BOX 39.95
X-Switch BOX 39.95

Printer Buffer
* 64K Parallel/parallel
* Copy, Bypass, Reset
.....$ 96.00

FACIT 6 PEN PLOTTERS
HP 7475 COMPATIBLE
* 4550 8.5X11 395.00
* 4551 17X 11 675.00

Keychart Software $90

COMPUTER SHOPPER...
A Great Stocking Stuffer!
See details on page 54.

Silver Box
continued from page 190

can be finished in one half the time required for the normal mode and you can record more data per revolution of the disk.

This transfer rate of 500KBPS is the same as the 8" drives which have the 360RPM spindle speed and 77 tracks, three less than the AT. In other words, the AT drive has the capacity of an 8" drive with only 5.25" drive dimensions. One difference is that you can use three more tracks in the AT drives. Each track contains 7,680 bytes, so you have 23,040 bytes more than the DSDD 8" diskette does.

The Difference Number Three is the step rate. The head is positioned to a desired track by a stepper motor. The step rate governs the moving speed of the head. Normal 5.25" drives has maximum catalog stop rate of 6MS. The AT drives have 3MS step rate, a twice faster track seek speed.

Chinon AT Drive, F-506L

This is a low cost drive of high quality. The one I have uses the direct-drive motor made by JVC, a respected name in Audio equipment. The motor has been designed with two speeds, 300RPM and 360RPM. It has a diecast frame which is more rigid than the sheet metal job. Mine has a gray bezel as most AT drives have. The manufacturer put the lever and the LED on the opposite side compared to the TEAC drive. I would have liked the lever on the right side like TEAC drives have.

This configuration is better for me than the Chinon style which seems to be specifically targeted to the left-handed population of the computing public. The left side lever is inconvenient and motion of the arm to operate it is less smooth than otherwise, in the point of good human engineering.

The head movement is quick and quiter than the TEAC 55 F. The motor is smooth and noiseless. The lever action is not too steady and makes tinny noises. It has disk eject spring but it did not spit the disk out like some other drives did.

The electronics assembly is neatly packaged with the two LSI SMD (surface mounted device) circuits with minimum of TTL ICs. The notable difference is the absence of a large dropping resistor normally found in the drive electronics. The result was low current drain which is quite important nowadays. It draws typical of 5V 370-380MA during disk operation. The motor draws about 200MA. When stepping the additional current drain of 380MA at 12V is required. Standby current on the 5V line is 300MA. The weight of the drive is slightly less than three pounds which is rather heavy due to the employment of the rigid diecast frame. I would not use this drive if I was designing a transportable computer.

The Price And Performance

The reason why I picked up this drive is its price and performance. One dealer quoted me the same price as most 96tpi drives, which goes somewhere from low of $90 to high of $130 per unit. One well known American manufacturer of the AT drive once quoted me factory price of $220 each, in quantities of several thousand pieces.

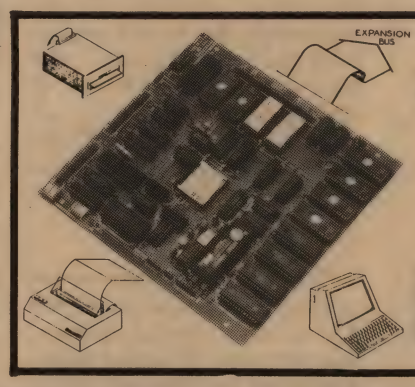
There is a good reason now to buy the AT drives instead of buying the ordinary 96tpi drives which may become obsolete sooner than the AT type drives, besides, this drive can hold much more bits and bytes. The integrity of the media and the hardware used in this floppy technology has improved so much that a new format, such as European ISO standard, can be used without fear of losing data. This simple software change alone can bring you 20% capacity increase with ease.

The unformatted capacity of this drive is about 1.67M bytes, but this figure can be improved by factor of 1.5 if you use variable speed and different sector/track values for the outer 40 tracks and the inner 40 tracks. You can use 20 sectors/track in the outer tracks at 300RPM speed with 500KBPS transfer rate, if you just select a suitable media. When using inner tracks, the speed is increased to 360 and the number of sectors put on a track should be reduced to somewhere between 15 to 17.

With this method and reduced overhead, you should get about 2.0M Bytes on a floppy with good integrity of records. The Victor Technology did achieve 800K formatted capacity on just one side of SSDD disks in their Victor 9000 machine in 1982. The drive spindle speed was controlled but otherwise the drive itself was the run of the mill kind, an ordinary low commercial grade drive made by Tandon.

I will try to answer your questions of how to use this drive in AT mode in the Sanyo in the later sector.

continued on page 194



AN INTEGRATED SINGLE BOARD COMPUTER AND DEVELOPMENT SYSTEM FOR PRODUCT APPLICATIONS

The OEM188 is designed to bring your product to market in the fastest possible time-through the most productive software development environment available and cost effective hardware.

* CHOOSE the operating system and language you like. The OEM188 boots MS-DOS or CP/M-86. Write your program in Assembler, Forth, Basic, C, Fortran or Pascal.
* ROM your code. The EPROM programmer is onboard and fully integrated into the hardware and software.
* DEVELOP your code quickly with Vesta's ROMmed languages designed for control tasks. Try our WRITE IT, RUN IT, ROM IT development environment.
* MARKET your product profitably, not only will you have a product ready in the fastest possible time, you will have a cost effective one.

Specs: Size 8"x8", FDC for 4 drives, Dual UART with RS-232, TTL and RS-422 I/O, Expansion port per IBM, Printer port, Watchdog, Battery backed real time clock and up to 256k static RAM/ROM. Programmer interface-terminal. Various I/O boards available.

OEM188 fully populated-$449 each ($250/1000) OEM188 kernal system-$329 each ($199/1000)
VESTA TECHNOLOGY INC, 7100 W 44th Ave, Suite 101, Wheatridge, CO, 80033, (303) 422-8088
VISA and MC accepted.

GEMS QUALITY COMPUTER PRODUCTS, ASSEMBLED AND TESTED AT NO ADDITIONAL COST ★ **DEALERS WANTED** ★ **408/946-2494**

XT COMPONENTS
- ★☐ 640K Motherboard ØK $94
- ☐ 640K Turbo 8MHZ Motherboard ØK .. 108
- ☐ 640K Turbo + 10 MHZ Motherboard ØK 139
- ☐ 640K Turbo 8MHZ 4 Layer Motherboard . 149
- ☐ 640K Ram Set 75
- ☐ Multi Disk I/O (Ser • Par • Cal • Clk • Disk Cont. • Ram Disk) 84
- ★☐ Floppy Disk Controller 32
- ☐ Monochrome Graphics Card w/Printer . 70
- ★☐ Color Graphics Card 57
- ☐ Color Graphics w/Printer Card 75
- ★☐ 135 W Power Supply 64
- ☐ 150 W Power Supply 67
- ☐ 180 W Power Supply 78
- ★☐ XT Lift-up Case 29
- ☐ XT Slide-out Case 31
- ☐ XT Case AT Look-A-Like 42
- ★☐ Keyboard #5150 55
- ☐ Keyboard # 5151 65
- ☐ Keyboard #5161 (Cross Between 5151/5060) 69
- ☐ Keyboard #5060 AT for XT 65
- ☐ 384K Multi Function (6 Functions) 85
- ☐ Teac 55BV ½HT Floppy Drives 95
- ☐ Fujitsu 360K Floppy Drives Great! .. 84
- ☐ Serial Printer Card / Parallel Printer Card . 36/28
- ☐ Second Serial Port Kit 25
- ☐ **EGA: Enchanced Graphics Adapter** 256K Screen Buffer • CGA, EGA • Monochrome Display Adapter • Hercules Graphics Card Compat. $229

AT COMPONENTS
- ☐ AT Motherboard ØK $589
- ☐ AT Case 89
- ☐ AT Power Supply 200-220W 115
- ☐ 1 MB Ram Set for AT Motherboard 107
- ☐ AT Keyboard #5060/5161 74
- ☐ AT Floppy & Hard Disk Controller 219
- ☐ AT Teac 1.2 MB Floppy Drive 135
- ☐ AT Multi-I/O (Ser • Par • Game) 75

MONITORS
- ★☐ Monochrome Amber Samsung/Casper $78/98
- ☐ Princeton Graphics MAX12 169
- ☐ Amdek 310A ..... CALL
- ☐ Princeton Graphics HX12 419
- ☐ TATUNG 1380F EGA Mon. 640 x 350 .31mm 465
- ☐ NEC Multisync 800 x 560 EGA .... CALL
- ☐ NANAO EGA Mon. 640 x 350 .28mm ... 489
- ☐ CASPER Color Mon. 640 x 200 289
- ☐ Amdek 300A Composite (Used-Good Cond.) . 69

HARD DRIVES
- ☐ 20 MB WD File Card Fits-in-a-Slot . $549
- ☐ 20 MB ST-225 Seagate w/Cont. 395
- ☐ 20 MB ST-4026 40 ms wo/Cont. ... 529
- ☐ 30 MB ST-238 w/Adeptec Cont. 499
- ☐ 30 MB ST-4038 F/H 40ms wo/Cont. . 629
- ☐ 40 MB ST-4051 Seagate wo/Cont. . 714
- ☐ Speedstor Formatting $/w for ST-4051 . 59

SHARP PC-7000 IBM Compatiable
MS:DOS 2.10, 32KB, EXP 704, 2-360K DR. or Dual Speed 4.77 & 7.34 Ser • Par ☐ $1289

AMQ IBM Compatible Transportable
Like Compaq & more - But Half the Price
Send for Information ..... ☐ $1249

TOSHIBA T-1100 + Lap Top NEW!
Dual speed, 2 3 ½ Drives 720 KB ea, LCD Display
SEND FOR INFORMATION ..... ☐ $1795

TOSHIBA T-3100 Lap Top AT System
80286 CPU, 8 MHZ, 1 3½ 720 KB Floppy
1 10 MB Hard Drive, Plasma Display . ☐ $3749

MODEMS
- ☐ AVATEX Modem 300/1200 Ext. 90% Hayes Compat. $ 89
- ☐ Everex Modem Int 300/1200 119
- ☐ Trilink 2400 Modem Ext. Hayes Compat. .. 299

Brother Printer M-1109 100 CPS 80 Col . ☐$179

DRAMS	9 pc set	100 pcs	250 pcs	500 pcs	1000 pcs
256K 150 ns	28.00 set	2.79 ea	2.69 ea	2.59 ea	2.45 ea
256K 120 ns	34.00 set	3.19 ea	3.09 ea	2.92 ea	2.81 ea
64K 150 ns	8.82 set	.92 ea	.90 ea	.88 ea	.86 ea

★☐ **NEC** V-20 8 MHZ $9.99

- ☐ Turbo Prolog Borland ..... $ 68
- ☐ Turbo Pascal Borland 45
- ☐ Turbo Tutor Borland 27
- ☐ Superkey Borland 45
- ☐ Sidekick Borland 37
- ☐ Turbo Lighting Borland 65
- ☐ Windows Microsoft 67
- ☐ Word Microsoft 249
- ☐ Typing Tutor II Microsoft 19
- ☐ Flight Simulator Microsoft 34
- ☐ Chart Ver. 2.0 Microsoft 198

☐ MS. DOS 3.1 + Basic w/Doc ..... $ 95

PUBLIC DOMAIN - Special 6 Pak
PC Write • PC File III • DBMS Data Base • Personal MGR • Desk Mate • Games ... ☐ $ 17

GEMS AT SYSTEM
1. U.S.A. Designed Motherboard
2. 6 & 8 MHZ Turbo Motherboard
3. 512K Bytes Ram Memory
4. 1.2 Floppy Disk Drive
5. 5060 Type Keyboard
6. Case & Power Supply
7. Documentation
8. Floppy/Hard Controller

$1245

★★★★★★★★★★★★★★★★★★★★
SEE AT COMPONENTS FOR OPTIONAL BOARDS
SEE HARD DISK SELECTION FOR YOUR CHOICE

GEMS MACH III XT
RATED 3.0 ON THE NORTON (SI) SPEED TEST
1. 640K Turbo 4.77/8.0 MHZ Motherboard
2. 640K Ram (All Drams 150 ns or Faster)
3. NEC V-20 Microprocessor
4. 135w Power Supply
5. Keyboard #5060 AT Type or #5161
6. Monochrome Graphics with Printer (Parallel)
7. Case
8. Monitor TTL Amber 720 x 384 Resolution
9. 2 New, High Quality ½HT 360K Fujitsu F/Drives
10. Serial, Parallel, Game Ports
11. Software: Calendar, Clock, Ram Disk, Print Spooler
12. Additional Software 5 Disk Pack-Public Domain
13. FCC Approved
14. 10 Blank Disks
15. Do You Really Need More! OK

1 Year Warranty • Assembled & Tested

$849

INSTRUCTIONS 1) Check blocks for items wanted ☑. 2) Add cost for each item and subtotal. 3) Add 4% shipping & handling (For XT or AT Case 4% S/H not applicable) or call for exact charge. CA resident add 6½% sales tax. 4) Make check, money order, or cashiers check payable to "GEMS" for total amount. 5) Mail in form with payment to:

GEMS COMPUTERS 3064 Postwood Dr., San Jose, CA 95132 (408) 946-2494.

NAME _____ A/C _____ PHONE# _____

SHIP TO ADDRESS _____

CITY _____ STATE _____ ZIP _____

ADD 5% FOR C.O.D. ORDERS • MOST ITEMS SHIPPED WITHIN 48 HRS. • THANK YOU FOR YOUR ORDER.

Wells American A*Star Multi-User Computer

by Elliott S. Kanter

Editor's Note: This is not a hand's on review of A*Star. We will present one in a later issue.

There's no getting around the fact, prices for PC compatible computers, even those that are AT compatible are dropping on a daily basis. Less than a year ago, you would have been lucky to build your own PC XT for less than $2,000 using available components. Today, less than $2,000 buys you a fully equipped—even enhanced PC XT and it will even include a monitor. It makes you wonder just how prices are established and why a computer from XYZ costs more than the system from QRS. A brief lesson in the economics of manufacturing and distribution is obviously in order.

The price of a computer is based on a combination of factors; these factors have to do with the cost of manufacturing (parts), labor (cost to build) and an overhead factor to account for the costs of selling/distributing/advertising etc. This allows a company a margin for profit and some return to stockholders on their investments. Some companies have high MOLs (Manufacturing Overhead Labor), others can keep their's low. The key issue is how the product gets to you, the end-user.

The more hands it passes through, the higher the cost, after all, everyone in the "chain" has to make a profit. Obviously, the less people separating the manufacturer from the user, the lower the cost! What if these layers of distribution were stripped away—how much would you save by dealing direct with the manufacturer?

TABLE 1. BASIC SYSTEM COMPARISON

IBM AT (Basic Configuration)

16/24 bit 80286 microprocessor
1.2 MB Floppy Drive
256K RAM
8 expansion slots, one occupied by Fixed disk drive/Floppy disk drive controller.

Manufacturer's Suggested Retail Price $3995.00(1)*

A*Star Model 100 Computer (Basic Configuration)

16/24 bit 80286 microprocessor
1.2 MB Floppy Drive
512K RAM
8 expansion slots, all available for use.
Fixed disk drive/Floppy disk drive controller located on the main circuit board.

Manufacturer's Suggested Retail Price $1495.00

Note 1. In order to provide a true comparison, the IBM AT price of $3995.00 should be adjusted upwards by $200.00 to $4195.00 to reflect the configuration with 512K RAM (standard system configuration for the A*Star Model 100).

*** IBM has sharply reduced prices since this article was written, but the comparison is still valid.**

Obviously there was quite a difference in the cost of the "basic" AT, but I wanted a 30MB fixed disk drive, extra memory and wanted to compare the A*Star to the IBM in a "ready-to-run" configuration, which resulted in Table 2.

TABLE 2. COST COMPARISON "ENHANCED" COMPUTER SYSTEMS

IBM AT ENHANCED	$5685.00(1)*
Available Slots	4
A*Star Model 300	$2614.00(2)*
Available Slots	6

Note 1. IBM BASIC pricing of $5295.00 adjusted to include $165.00 for added 512K RAM and $225.00 for Monochrome/Graphics Parallel Port Adapter.

Note 2. A*Star Model 300 basic price of $2495.00 adjusted to include $119.00 for Monochrome/Graphics Parallel Port Adapter, all other features standard.

*** IBM has sharply reduced prices since this article was written, but the comparison is still valid.**

The $1495 PC AT

Computers, like cars, come in many sizes, shapes, and with a large assortment of options. The prices usually shown in the ads reflect the stripped down versions so when I saw the Wells American ad for a $1495 PC AT compatible, I was more than a bit curious. What was missing, and what was included, especially in light of the fact that the price was about one third of the current IBM PC AT suggested list. A phone call and a letter later, I was able to compare the results as shown here as Table 1.

Obviously, the price alone does not make a computer purchase decision. Features and benefits play an important role in the selection process. Rather than simply produce a less expensive "clone" AT, Wells American elected to add value and features to the A*Star.

Features/Benefits

Glancing even quickly at the two tables, you can see that there is more memory, more available explansion slots and less over all cost—definitely all benefits and a feature or two thrown in. But what makes the A*Star that much better, more unique and less expensive can be found once the cover is removed.

On-Board Drive Controller

Unlike the IBM PC AT, the A*Star, making use of VSL1 (very large scale integrated circuitry) has its floppy/fixed disk drive controller as part of the main printed circuit board. No expansion slot is taken up by a controller card, and the on-board controller can handle two floppy disk drives and two fixed disk drives with all connections available on the main printed circuit board. The controller is capable of controlling the factory-furnished dual-speed disk drive to permit better interchange of data between conventional (360KB) floppy drives and the 1.2 MB AT floppy. The second (optional) floppy drive can be either high density (1.2 MB) or a 360KB device.

Wells American A*Star

ZIP-Pack RAM

The standard 512K RAM may be expanded on-board to a total of 1024K of RAM without the need for adapter cards.

The A*Star utilizes the very latest "ZIP"-pack 256K RAM chips which are not only easier to handle than the dual-in-line chips (DIP), but they take up considerably less room on the circuit board and therefore additional memory expansion capabilities were standard rather than requiring adapter cards once the 512K RAM limitations of the IBM AT were met.

Network Ready

The A*Star is "billed" as a Multi-User Business computer and has interface circuitry as well as a BNC connector (rear-panel) for interconnection within a Local Area Network (LAN) which is not only available now, but low in cost. Any combinations of PCs, PC-XTs or PC ATs can be interconnected (up to a total of 255) in an easy to use LAN. Any compatible PC can function within the LAN as long as there is one vacant expansion slot to handle the Network Adapter Card. There are two varieties of cards, one for use in the network-ready A*Star, the other for use in any PC compatible computer.

The LAN utilizes many of the DOS command structures so that anyone who is familiar with PC DOS can follow some simple on-screen prompts and menus cannot only set up the LAN but serve as the System Manager. The network utilizes readily available and inexpensive RG-59AU cable for interconnects.

Two-Speed Standard, Four Speed Optional

Until recently the IBM AT's microprocessor operated at 6 mHz, a speed considered by some to be hardly using the power of the 80286 CPU. There were even add-on kits made available to speed the chip up to a more reasonable and practical 8 mHz. However, besides being costly, the add-ons didn't always work as well as advertised. The latest versions of the AT did away with the limitation and increased the speed to 8mHz, again, there are still some conditions especially with certain software where the 6 mHz although slower is more reliable.

The A*Star entered the arena with a two-speed CPU, either 6mHz or 8 mHz could be selected with a hardware switch or via the keyboard and a software program called

continued on page 193

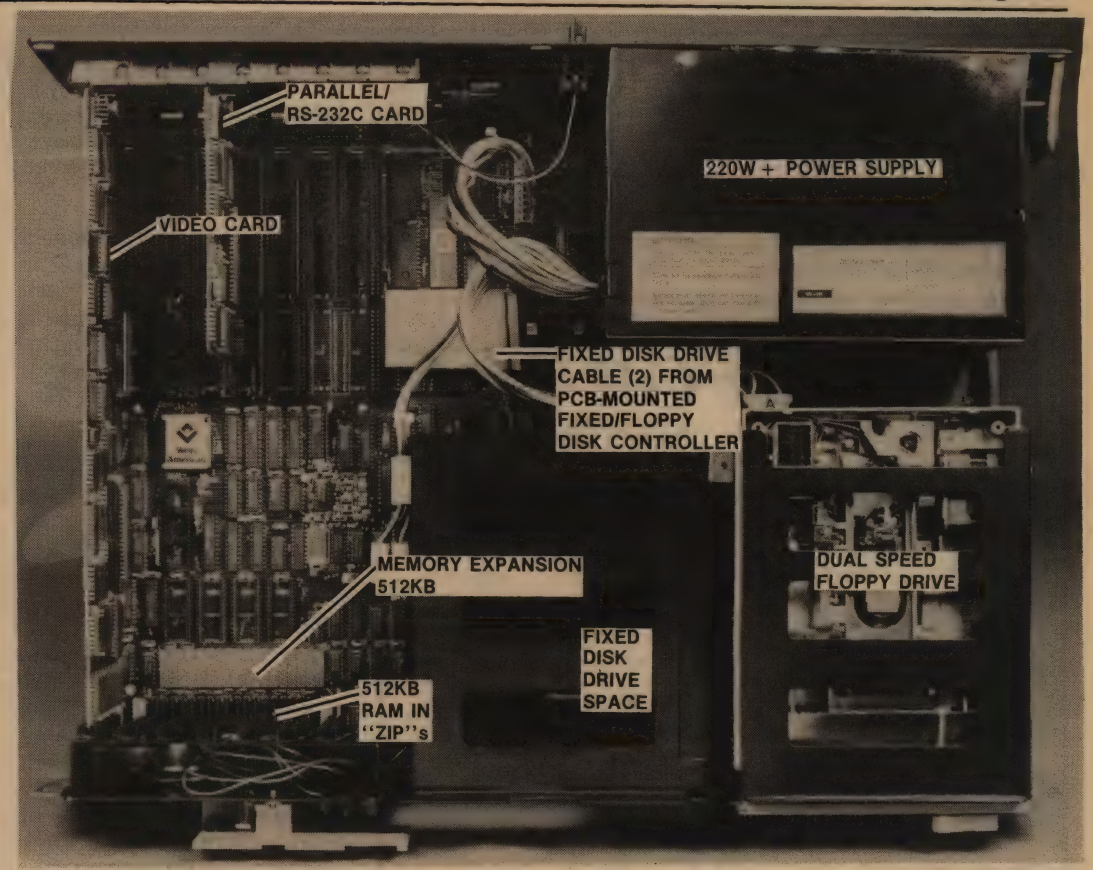
Wells American

continued from page 192

SETSPEED. With the advent of the 8 mHz IBM AT, A*Star now offers an optional user installed 12 mHz CPU which allows the user to select 6, 8, 10, or 12 mHz speeds and tailor the computer's performance to an individual software package. For example, CorrectStar, the excellent spelling checker from MicroPro has been called great but slow—that is not always true. In a conventional PC operating at 4.77 mHz it's not a speed demon, but put it in the A*Star at 8 mHz or if you really can enter choices fast at 10 or 12 mHz and you have a package as fast if not faster than most people can use—that's the advantage of a 4 speed!

Batteries Are Included

I was amazed to find a package of four AA sized alkaline batteries packed along with my A*Star, that is until I found out that they were used first to support the on-board clock, and also to keep the "set-up" information in CMOS RAM. Having had my share of problems with battery-backed up on-board or adapter mounted clocks, I immediately understood the wisdom of providing the battery-backup in a form that when the time comes for replacement, a special order or trip to a computer specialty house is not necessary. Any garden variety alkaline penlight cells will do, and they can be readily obtained anywhere and usually at any time day or night. On the other hand, the "set-up" routine contained in CMOS RAM intrigued me no-end. When you first set up your system, the SET-UP diskette asks you to identify all of the features you have in your individual system such as numbers and types of floppy and fixed drives, memory, display adapters etc. This information is stored in CMOS RAM kept "alive" by the same four batteries that supply the on-board clock. In retrospect, the set-up routine and information was reminiscent of the old "Configuration" routine found in CP/M systems, except this one stays in RAM. You need not concern yourself with this routine unless you add something to your system, have to change the batteries, or twice yearly have to reset the clock. The SET-UP diskette also contains a head parking routine for use with fixed disk drives whose heads don't retract automatically on power-down.



INSIDE VIEW WELLS AMERICAN A*STAR COMPUTER KANTER, ES

Dual Speed Floppy Drive

Between the multi-speed CPU and the floppy drive, it almost seems as if you have a sophisticated racing car rather than a computer, but in this case, the high density floppy drive operates at either 300 or 360 RPM. This allows you to read and write to either high density diskettes (1.2 MB) or standard PC/XT 360KB diskettes. This interchange of data can be reproduced reliably (according to my testing) by first formatting the diskette (i.e. a 360 KB) in the A*Star and then transferring data from an existing 360 KB diskette to this newly formatted one by using the DOS COPY command. I found that I was able to interchange data reliably using this technique. All speed control functions are provided by the on-board disk controller.

Other Features

The A*Star comes standard with a dual voltage (110/220) volt 220 + Watt Power Supply which should handle any and all requirements for the immediate as well as your future computing requirements.

The A*Star obviously offers a substantial cost savings over a comparably equipped IBM PC AT, but equally obviously, you might wonder just how compatible the unit is, and something about its percentage. The first concern can be satisfied by an impressive looking document which says quite simply "...if for any reason you are dissatisfied with your A*Star computer within the first 31 days, you can return it for a full refund including an allowance for shipping charges...."

The A*Star is "Made in the USA" by a thirteen year veteran of computer manufacturing. The plant, located in West Columbia, South Carolina is modern, and equipped with the very latest automated assembly and testing equipment. You might even do what I did, visit the plant in West Columbia and watch your own A*Star being built.

A word of caution, don't expect to take delivery that day, each computer goes through an extensive and intensive battery of tests and then a burn-in before it is shipped.

Overall Evaluation

The A*Star isn't just another clone, Wells American has added value, features and benefits while holding down the final costs. Quality was not sacrificed to ensure a low price, only the layers of distribution which add to the cost of a computer were eliminated. If you are looking for your next, first or last PC the Wells American A*Star could be that very machine.

For additional information about the Wells American A*Star Computer System write:

Wells American
3243 Sunset Blvd.
West Columbia, SC 29169
(803) 796-7800 ●

New Enhanced

continued from page 169

AST-3G Pak offers high resolution graphics, full-spectrum color capabilities, high-quality text and full compatibility with all popular applications software.

The AST-3G Pak comes with either 64K bytes of 256K bytes of on-board graphics memory on a single, full-length board, and a Memory Enhancement Kit can be purchased to upgrade the card from 64K bytes to 256K bytes of memory.

With a choice of up to 16 colors from a palette of 64, the AST-3G Pak offers a resolution of up to 640 by 350 pixels for crisp, full-color images. For high-quality text generation, the adapter provides a 9-by-14-pixel character box in monochrome text mode or an 8-by-14-pixel character box in full color.

Compatible with three IBM monitors, the AST-3G works with the Model 5151 Monochrome Display, Model 5153 Color Display and Model 5154 Enhanced Color Display. And, the AST-3G Pak design enables flicker-free panning and smooth scrolling.

All options—including the game port option and the Memory Enhancement Kit—can be factory configured or easily installed later. For installation, the user simply plugs the chips into sockets on the board—no tools are required.

Included with the AST-3G Pak is the company's SuperPak 5.0 utility software, which incorporates versions of SuperDrive, a RAM disk simulator program, and SuperSpool, a print spooler utility. SuperDrive allows users to define "logical" disk drives of up to 1.2 megabytes in memory, while the SuperSpool utility creates a printer output buffer in memory, allowing users to work with their PC at the same time data is being printed.

Prices for the AST-3G Pak Enhanced Graphics Adapter include $575 (64K), $625 (64K with game port), $650 (256K) and $700 (256K with game port).

For additional information contact AST Research, 2121 Alton Avenue, Irvine, CA 92714; (714) 863-1333.

Mention that you read about it in *Computer Shopper*. ●

Copy Protection Dropped on TK!Solver

In a move designed to "stop penalizing good customers for the actions of few," UTS recently announced that as of July 15, TK!Solver would be shipped without copy protection.

Art Cornwell, vice president of marketing of Universal Technical Systems, explained the shift in philosophy. "Our primary customers are corporate accounts and professionals outside of the corporate world. We are sure that these customers recognize and understand how TK! may be legally used. They trust us to produce a quality product, which is easy to use. We can certainly trust them to honor our licensing agreement."

Prior to this announcement, TK!Solver was protected by a system which would permit the copying of backup disks, as well as installing and uninstalling on hard disk. "We feel that the protection scheme we used was the best in the industry," explained Cornwell. "Despite that, our customers were telling us that any copy protection was disadvantageous. The whole subject of copy protection is a very fast moving one and we intend to constantly monitor the situation."

For additional information contact Universal Technical Systems, Inc., 1220 Rock Street, Rockford, IL 61101; (815) 963-2220. ●

Silver Box
continued from page 191

The AT Drive In Your Sanyo

There is no special care necessary to hookup this AT drive in your machine. Just the right option selection is all you need to adopt this drive as an ordinary 80 track drive.

As I explained above the pin 2 of the interface connector controls the speed of the drive but we can skip this item at this time. Except for the function of this pin 2, the drive is configured the same as the ubiquitous TEAC 96tpi drives, but the option setting must be examined and verified before you put it in the cabinet.

The right selection of jumpers are as follows:

A. J1 Jumper Selections

Set the drive in front of you facing the J1 which is located on the right side of the drive. The J1 positions are numbered from 1 to 11.

POS. #1: This pin is designated as "TERM" and activates the termination resistors when jumpered. Jumper this one if this drive is at the end of the interface cable then remove all the termination resistors from other drives.

POS. #2 to #5: These are the Drive Number selection jumpers. Positions #2 is for Drive A, #3 is for Drive B, and so forth.

POS. #6/#7: This is the Mode Control 1 Sense. This option controls the selection of the motor speed. The manual preaches to use option #6, but it produces 360RPM speed. Therefore, we should use the option #7 to make the motor rotate at 300RPM speed. Only one of these options should be selected. Set jumper on #7.

POS. #8/#9: Mode Control 2 Sense. Changes operating mode at 360RPM. Only one of this pair should be selected. Since we are not concerned with these modes at this time, no jumper is necessary and you should pull out any if you find a jumper on this pair of pins.

POS. #10/#11: RPM Control. #10 for 300/360RPM. #11 for 360 RPM speed only. We must select #10. There is no other choice. Put jumper on position #11.

B. J2 Jumper Selections

Even the Chinon's factory installation manual is not explicit on this group of selection. The positions #1 and #2 are concerned with the selection of the Ready signal. Jumper on #1 connects the internal Ready signal line to the pin 34 of the Interface connector, so we select this pin.

POS. #1: Ready signal option. This jumper connects the internal Ready signal to outside world. Put jumper on this position.

POS. #2: No explanation is given for this option, other than the signal line called Dich Out is handed with the Drive Select signal to produce this optional signal. We selected the Ready signal for the pin 34, and therefore, no jumper should be placed here.

POS. #3: This is marked as "Mode 1" selection pin. The manual indicated the use as selection of operating modes at 360RPM spindle speed. No Jumper should be on this option.

POS. #4: This is the "MODE 2" selection in which both 300/360RPM speed can be switched by the signal applied to the Interface connector pin 2. Since we are using the drive at 300RPM at this time, we should select this option. Put a jumper on this one.

The above jumper selection will enable the Chinon F-506L to run as ordinary 96tpi drives in the Sanyo MBC-555. But one other thing remains to be checked out. That is the question of alignment. If this drive does not work on the disks formatted by other drives, the stepper motor must be adjusted to set the head on the right tracks.

The drive uses a pancake type stepper. In order to adjust the head position, loosen the two screws on the motor bracket and turn the motor, gradually and in very small increments. Mine was adjusted to conform to other drives I have. Alignment is a common problem with all the 80 track drives, if you are interested read the standard 360K DSDD disks. This was also a common problem with the products of Eagle Computer which advertised 40/80 track compatibility.

The AT Mode Operation

As hardware goes, this is relatively easy. This is done by a simple change of the clock frequency. The clock fed to the disk Controller, the 765, and the clock recovery circuitry must be switched. You can select the predetermined drive position for the AT type drive. I would probably select the D position for the AT drive. Then, pick off the drive D select signal and operate a 74LS51 TTL switch to change the clock frequency to these circuits. This change automatically changes the step rate from 6MS to 3MS as required by the drive.

The only other departure from the normal 80 track drive is the software which should format and use the disks at 15 sectors/track. So the story continues...

Since the Sanyo computer has grown up to the ranks of beyond the ordinary PCs with the larger memory and much faster running speed, it is about time that this computer is seriously considered in the real business applications. Therefore, I think we should do a little evaluation of the hard disk drives for the Sanyo.

One of the manufacturers I had a conversation with said the quantity of possible sales does not warrant tying up one whole unit for a couple of months or more, but said he can submit the controller for evaluation. I am supposed to use my own hard disk drive unit for this evaluation, whether it is Lapine, Priam or Seagate. So, this may become a contest of controllers rather than a whole unit. Dear readers and the Sanyo devotees, shall we do such an enormous undertaking for the size of our population? Please give me a note, if you are considering a hard disk drive purchase. ●

FORMS FOR YOU

P.O BOX 3480, POUGHKEEPSIE, N.Y. 12603

(914) 471-8399 TOLL FREE OUTSIDE N.Y.S. 1-800-431-4665

PRINTER PAPER		HALF-PAK	FULL CARTON
9½ x 3⅔	20# BLANK WHITE ONE THIRD SHEETS	4,500—24.00	9,000—44.00
9½ x 5½	20# BLANK WHITE HALF-SHEETS	3,000—24.00	6,000—44.00
9½ x 11	20# 1/6 BLUE BAR E-Z READ	1,500—23.00	3,000—39.00
9½ x 11	20# BLANK WHITE	1,500—23.00	3,000—42.00
9½ x 11	20# BLANK WHITE *	1,300—19.95	2,600—28.00
9½ x 11	24# PREMIUM BOND*	1,200—23.00	2,400—37.50
CONTINUOUS STATIONERY WATERMARKED BOND			
9½ x 11	24# WHITE 25% RAG*	1,000—39.00	2,000—72.00
9½ x 11	24# CLASSIC LAID*	1,000—42.00	2,000—79.00

AVAILABLE IN WHITE—IVORY—TAN—GREY—BLUE (SPECIFY COLOR)

PRESENTATION STATIONERY & ENVELOPES

24# CLASSIC LAID*

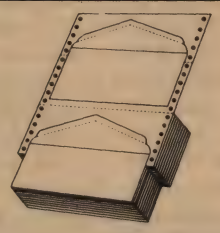
1. WHITE W/BLUE BORDER
2. IVORY W/BROWN BORDER
3. GREY W/RED BORDER

(SPECIFY COMBINATION WHEN ORDERING)
(250)-12.00 (1,000)-44.00 (2,000)-82.00

*THE EDGE PERFORATIONS FOR CUT SHEET APPEARANCE.

CARRIER MOUNTED ENVELOPES

STATIONERY QUALITY TO MATCH OUR LETTERHEADS—24# WHITE—25% COTTON FIBER, 24# CLASSIC LAID—WHITE, IVORY, GREY, TAN OR BLUE. MOUNTED ON A 10" CARRIER—WILL NOT FIT FIXED PLATEN PRINTERS.

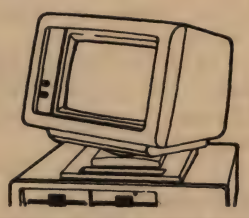


(250)-19.00 (500)-36.00 (1,000)-70.00

SYSTEM CENTER

MASTER SWITCH WITH 6 CONTROL SWITCHES — COMPUTER, MONITOR, PRINTER AND 3 AUXILIARY SWITCHES. BUILT-IN SURGE PROTECTOR WITH EMI/RFI/SPIKE FILTERS.

COLOR-PUTTY $79.95

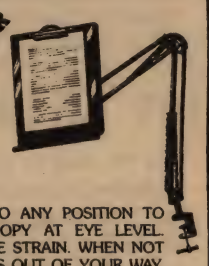


TWIST & TILT

A UNIVERSAL MONITOR STAND THAT WILL ADJUST A FULL 25° AND TWIST 360°. ELIMINATES GLARE AND EYE STRAIN.

COLOR-PUTTY $24.95

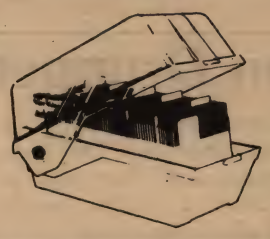
COPY-HOLDER



ADJUSTABLE TO ANY POSITION TO KEEP YOUR COPY AT EYE LEVEL. ELIMINATES EYE STRAIN. WHEN NOT IN USE, SWINGS OUT OF YOUR WAY. HEAVY DUTY STEEL CONTRUCTION. 30" REACH.

COLOR-PUTTY $25.00

DISK FILE-120



FLIP TOP FILE HOLDS 120 5¼" DISKS STACKABLE—PUTTY BASE—SMOKE LID—17.95

FREE SHIPPING CONTINENTAL USA

ALL ITEMS STOCKED FOR IMMEDIATE SHIPMENT. WE ACCEPT MONEY ORDERS, VISA AND MASTER CARD, COMPANY OR PERSONAL CHECKS. (ALLOW 2 WEEKS FOR PERSONAL CHECKS TO CLEAR.) CALL OR WRITE FOR COMPLETE CATALOG. N.Y. RESIDENTS ADD APPROPRIATE SALES TAX. 15.00 MINIMUM ON CREDIT CARDS. PLEASE NO C.O.D. ORDERS.

CALL TOLL FREE—1-800-431-4665 (OUTSIDE N.Y.S.)

RETAILERS SELL

Increase your profits and generate more traffic by selling *Computer Shopper*.

We will send you copies prepaid and supply you with an attractive counter rack to help you display *Computer Shopper*.

Just call us at 1-305-269-3211 and ask for Lori, or write P.O. Box F, Titusville, FL 32781. She will give you the details and start the copies coming.

Offer valid to stores not serviced by a magazine wholesaler.

COMPUTER SHOPPER

CAD

PLOTTERS	
HOUSTON INST:	
DMP—29	$1750
DMP—41/42	$2365
DMP—51/52	$3575
DMP—56(E—SIZE)	$4348
IOLINE(E—SIZE)	$3895
NUMONICS 5460	$2225
CALCOMP 1043GT	$7350
DIGITIZERS	
KURTA 12"X12"	$579
NUMONICS 12"X12"	$625
SCRIPTEL " "	$859
MONITORS	
AMTRON 19"	$2595
CABRIDGE 1024 20"	$2395
HITACHI 3719A 19"	$1795
GRAPHICS BOARDS	
ULTRAGRAPHICS	
800X400 COLOR	$725
SIGMA 400L	$495
COMPUTERS	
TI,ITT,SPERRY,CORDATA	
CAD SOFTWARE	
AUTOCAD,MEGACAD	

CITY LITHO
409 7TH ST. (318) 439-3555
P.O. BOX 555
LAKE CHARLES, LA. 70601
WITH ORDER WE PAY FOR YOUR CALL

Sanyo MBC continued from page 87

MichTron. These only supported certain printers, however, and if you didn't have a supported printer you either got garbage or odd printouts.

Video Boards

To add to the confusion, Sanyo—responding to the complaints of low IBM PC compatibility for the 55X series—has produced two Video Boards for the 55X. The first one, available until recently, primarily was intended to increase compatibility by running Lotus 1-2-3 and many other programs written for the IBM PC. This promised more than it delivered, and created problems of its own (like overloading the power supply, and requiring a different color monitor because of a change in sync polarity). The Video Board altered the Sanyo display so that it acted like the IBM PC, and many users have reported that a combination of the SHIFT-CTRL-DEL keys provide a text dump to the printer.

More recently Sanyo has made the VB512 available. This is a video board with 512K RAM added. After initial difficulties, users report this board seems to be working satisfactorily.

I've never added either Video Board to my system, so the tests of the software in this review pertain only to the "plain-vanilla" Sanyo MBC 550 or 555. I have 256K of RAM with my 555-2, but 128K should be sufficient for any of the programs to be described.

J & M To the Rescue!

J & M Software offers three different printer utility programs for the Sanyo MBC 55X series and IBM PC. ASCII Printer is a text dump, Printer Set-up Utility allows you to use the features of your printer at any time, and Video Printer is a combination of text and screen-dump programs. We'll discuss them each separately since they are sold (and priced) separately.

ASCII Printer

ASCII Printer is a RAM-resident program written for the Sanyo MBC 550/555 and the IBM PC/Compatibles to dump screen text to a printer. It will work with or without the Video Board on the Sanyo, and with either a dot-matrix or letter-quality printer.

Why, you may ask, do you need a text dump program for an IBM PC when the SHIFT-PrtSc keys do that already? Well, because with the key-dump command, you dump the entire screen—all 24 or 25 lines. ASCII Printer provides an exclusive feature. You select the starting and ending lines, and only those lines are sent to the printer! This is particularly useful in word processing functions when you wish to dump a portion of the screen, but not help-screens that tend to be above and below the text area.

The program can be implemented anytime (in BASIC, DOS or whenever, since it resides in a protected area of memory). For the IBM PC, you use the SHIFT-PrtSc combination. For the Sanyo 55X without Video Board, CTRL-SHIFT-PF1 does the trick. With the Video Board, CTRL-SHIFT-DEL is used.

When implemented, a prompt appears at the top of the screen. You move the prompt up and down the screen with the UP/DOWN ARROWS on the number keypad, until it is on the first line you want printed. When you press ENTER (down-left arrow-key), the prompt jumps to the last screen line. You move it to the last line you want printed, and press ENTER. Away she goes—assuming your printer is on and ready.

The program includes a Form Feed feature to advance the printer paper to the end of the sheet. It worked easily and quickly, without problems, with both my Super 5-CP80 (a Mannesmann Tally Spirit 80 clone) and Star SG-10 printers.

The price is $20, plus $2 shipping and handling.

Printer Set-up Utility

Printer Set-up Utility is a RAM-resident program written for the Sanyo MBC 550/555 and IBM PC/Compatible computers. It is menu-driven for ease of operation.

Because printers vary in how they react to the same command, you must order the proper version of this program to mate with your particular printer and computer. Two versions are available that cover the following combinations:

Epson RX/FX 80 Series & Sanyo or IBM
Epson RX/FX 100 Series & IBM
Epson FX 286 & IBM
Epson RX 85/185 & IBM
Star Gemini 10X/15X & Sanyo or IBM
Star SD10/15 & IBM

The program will run on compatibles of the above printers, but due to the wide range of printer commands and features, some functions may not operate on all printers. For example, I used the "Epson RX-80 and Compatibles" version with my CP80 non-Epson printer. Italics, underlining and compressed printing worked fine, but elongated printing, superscripts and subscripts did not. The Star version worked perfectly for every function

continued on next page

SANYO
SILVER REED
MICHTRON
SOUNDS of the OLD WEST

- 9 AM to 9 PM daily -
Ask for 550/555 Series price list.

SANYO

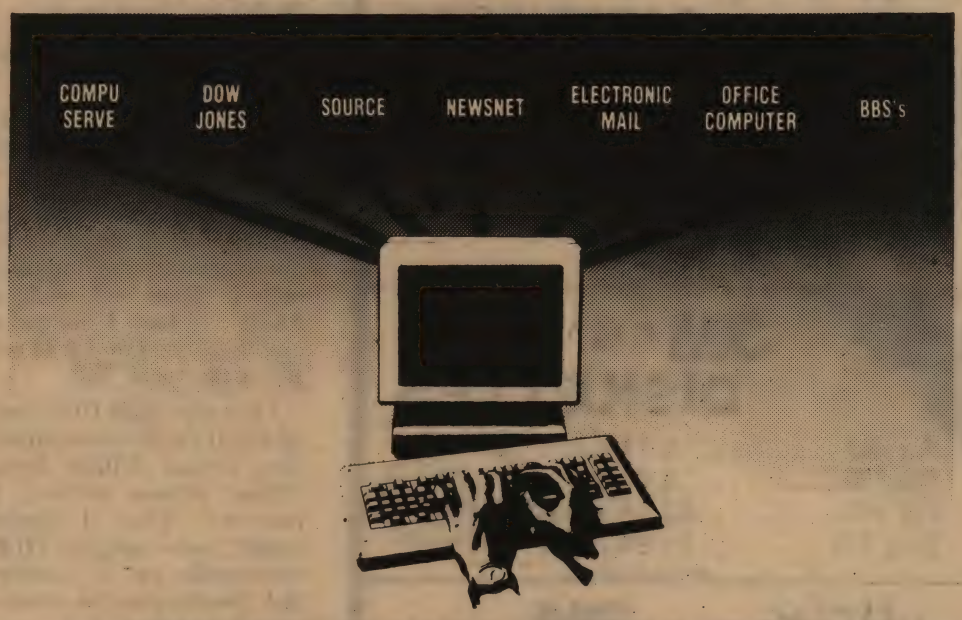
Microcomputer Systems

Tech manuals, software, hardware for Sanyo 550/555.
SANYO IBM Video Board with GW-BASIC. $CALL
RS-232C Serial Port for Sanyo 550/555. $CALL
Memory Chip Sets for Sanyo 550/555. $CALL
MISSING LINK Board. Up to 768K RAM, clock/calendar, IBM soft video. $225
dCLOCK Clock/Calendar Board for 550/555. Piggybacks in 8088 socket. $60
NEWPOKER! Game. Lifelike graphic cards. Includes free SETBAUD utility. $25
CORNERMAN Desk Manager. Excellent Sidekick type utility for 550/555. $40
FREEZE FRAME Key Screen Dump. Outputs text and graphics to printer. $40
ZBASIC Compiler for 550/555. Produces super fast code. No run-time fees. $85
A-OK DOS
DS-DOS
TEAC
DSDD
disk drives
DSQD

MULTI-TRONIX

3210 Terry Drive • Toledo, OH 43613 • Telephone: 419/472-3360

INTELLICOM



A COMPLETE COMMUNICATIONS PROGRAM

Now you can tap any of the countless telephone data based INFO sources. EXTRACT and FILE that data away for use later. Suddenly, your computer is the smartest terminal around because INTELLICOM emulates such terminals as:

- **DigitalVT52/VT100**
- **TeleVideo910 • ADM3A/5**
- **ADDS Viewpoint/25**
- **CompuServe Executive**
- **Simple TTY**
- **TeleVideo 925**

Now you can transfer **both binary and text** files, using simple ASCII, ASCII Capture, Xon/Xoff, XMODEM (both Cheksum and CRC are supported) or CompuServe A Protocols. Operate at any speed up to 4800 (Sanyo 555 or IBM PC Jr .versions) or 9600 baud (IBM PC) without ever being outdated as higher speed/lower priced modems are introduced

Simple menu selections, with a built in **HELP** facility keep it easy forever. And our expert mode will allow you to even bypass the menus. **Autodial directories (Hayes or equivalent modems) are supported along with simultaneous printing.** Our **built in DOS WINDOW** will actually **let you run another program** from within INTELICOM **(192K min. ram).**

Additional features: Variable Buffer Size reduces disk activity, while utilizing RAM capacity. **BATch file utility program** included. **Persistence feature for autodialing. Remote operation is supported.**

Auto log-on script files can be used to support almost any smart modem and/or automatically log into your favorite remote system. **User defined function keys. Color support. Michtron and AOK DOS support (Sanyo)** and more! Best of all, the entire versatile INTELLICOM package costs you ONLY **$89.95 COMPLETE! Rush $15 today and you'll receive a fully functional demo disk that lets you check it all out.** If you order INTELICOM, simply return the demo disk and we'll deduct your $15 from the $89.95 purchase price.

For $10.00 more we will supply you with the host support code for the error checking protocol on Dec system 10, 20, or VAX ... and save your company a bundle!

DON'T DELAY! ORDER TODAY! RETURN UPS SHIPMENT GUARANTEED! HURRY!

Available for: IBM PC, XT, AT and compatibles IBM PC Jr., Sanyo 550/555

COMPUTER TOOLBOX inc.

MasterCard/VISA/COD orders accepted. Specify computer and DOS version when ordering. Connecticut residents add 7½% sales tax. **Add $5 shipping for all orders.**

1325 East Main Street, Waterbury, CT 06705
In Connecticut call: 597-0273

ORDER 1-800-321-DATA TOLL FREE

Sanyo MBC
continued from page 195

with my Star SG-10 printer.

The program is implemented anytime by pressing CTRL-SHIFT-PF5 on the Sanyo, or ALT-F10 for the IBM PC. This displays the Main Menu, which allows you to select one of seven menus, to reset the printer to its power-up defaults, to send a test message to your printer, or to exit the program.

The various menus are "windowed" over the existing screen display, and disappear, leaving the original display, when you exit the program.

The text message is two lines of text and symbols, upper and lower case, with the last eleven characters displaying the selected International Character Set.

Using the Epson version as an example, the Main Menu allows you to select the following menus and functions:

Print Width Commands: Elite, compressed and expanded modes.

Print Quality Commands: Emphasized, double-strike, super/subscripts, underline.

Alternate Character Sets: Italics and eleven different International Character Sets.

Paper Feed Commands: Fixed and variable line spacing options and line feed.

Form Control Commands: Form feed, form length in lines or inches, variable skip-over-perforation, and enable/-disable the paper sensor.

Margin Control Commands: Left and right margins.

Speed and Directional Commands: Half-speed and unidirectional modes.

The program operated flawlessly (with the right computer/printer combination) both in DOS and while in BASIC. In fact, I decided to give these first two J & M programs the "acid" test.

I powered up in DOS, loaded ASCII Printer into memory, then loaded Printer Set-up Utility (Epson version) in memory. Then I loaded BASIC, and—using the FILES command—got a complete disk directory on the screen.

Next I turned on the CP80 printer, commanded the Set-up Main Menu with CTRL-SHIFT-PF5, then went to Menu 1 and selected compressed printing. I ESCaped from Set-up to eliminate the menu window, leaving the disk directory on the screen. I then pressed CTRL-SHIFT-PF1 to dump the entire disk directory—in compressed printing—to the printer. It all worked perfectly, with no conflicts!

The price for Printer Set-up Utility is $35, plus $2 shipping and handling. Be sure to specify the version.

Video Printer

Video Printer is a RAM-resident program written specifically for the Sanyo MBC 550/555 without a Video Board. It will **not** work with a Sanyo Video Board, or on an IBM PC/Compatible.

The program is available in five different versions: Star Gemini 10X, Mannesmann Tally Spirit 80, Epson RX80 or compatible, Hewlett-Packard Think Jet, Okimate 20.

I tested the Star Gemini 10X version on my Star SG-10 and the Spirit 80 version on my CP80. They worked perfectly, indicating you are not restricted to just those models listed, if your printer has the same control codes. Unfortunately, you can't be certain until you try.

The Video Printer includes the ASCII Printer already described, so you get both a text and graphic dump program together.

Like the other J & M programs, you load Video Printer into memory for DOS and it reserves its own spot in memory. I found no conflict between Video Printer and Printer Set-up Utility used together.

When you load Video Printer a screen display appears, as shown in Figure 1. It would be a good idea to get a text dump of this display for reference by pressing CTRL-PF6, since this display cannot be recalled except by loading the program.

Video Printer can be implemented at any time by using the "key sequence" shown in Figure 1. The program in progress is interrupted and the screen image is sent to the printer in one of three formats—full-size upright, compressed upright, or full-size sideways.

The size and proportions of the printout depend on your printer. For example, on my SG-10, the full-size upright image of Figure 1 was 7-7/8" wide and 4-3/4" high, but the same printout using the CP80 printer (and the iMannesmann Tally version of Video Printer) was 7-3/8" wide and 4-5/8" high.

This difference was more evident in the compressed upright dump shown in Figure 2. Here the SG-10 produced an image 5-1/4" wide by 2-1/2" high, while the CP80 image was only 3-3/4" wide and 2-1/4" high.

Both full-size sideways printouts (see Figure 3) were stretched out of proportion in their width. The SG-10 image was 8-1/4" wide and 4-3/8" high, while the CP80 printout measured 8" wide by 4-1/4" high.

When the printout is completed, control is returned to the program in progress as if it were never interrupted. This makes Video Printer invaluable for illustrating program manuals (and magazine articles!)

Video Printer worked perfectly, but with one shortcoming. It only recognizes dots of certain colors, since it scans only the green screen.

The Sanyo's colors are designated by numbers 0 through 7, with 0 as black (no color). The color number is actually a 3-bit binary code, with 1 for dark blue, 2 for green, and 4 for red. Any bit-code containing a 2 (2, 3, 6, and 7—green, light blue, yellow or white) will be recognized by Video Printer. The other colors (0, 1, 4, and 5—black, dark blue, red and magenta) will be ignored. There are no "grays"—just print or no-print. This means if you dump a screen with many colors, the printer will only print the green, light blue, yellow or white dots.

Video Printer is a powerful, easy to use ASCII/graphic screen dump program able to recognize and print any of the 128,000 dots on a Sanyo screen—if the dot is not one of the forbidden colors. It sells for $45 plus $2 shipping and handling.

ASCII Printer/Printer Set-Up/Video Printer
J & M Software
400 Sawyer Road
Lansing, MI 48910 ●

Figure 3

```
A>
                    VIDEO PRINTER
STAR MICRONICS PRINTER Version 1.0
Copyright (C) 1984 ProSoft Computer Sciences
The following utilities are now installed:
UTILITY                    KEY SEQUENCE
ASCII Character Print      Control PF6
Graphics Print Upright (large)   Control PF7
Graphics Print Upright (small)   Control PF8
Graphics Print Sideways    Control PF9
Printer Form Feed          Control/Shift PGUP
To Stop Print Anytime      Press ESC
```

Figure 2

```
VIDEO PRINTER
STAR MICRONICS PRINTER Version 1.0
Copyright (C) 1984 ProSoft Computer Sciences
The following utilities are now installed:
UTILITY                    KEY SEQUENCE
ASCII Character Print      Control PF6
Graphics Print Upright (large)   Control PF7
Graphics Print Upright (small)   Control PF8
Graphics Print Sideways    Control PF9
Printer Form Feed          Control/Shift PGUP
To Stop Print Anytime      Press ESC
A>
```

Figure 1

```
VIDEO PRINTER
STAR MICRONICS PRINTER Version 1.0
Copyright (C) 1984 ProSoft Computer Sciences
The following utilities are now installed:
UTILITY                    KEY SEQUENCE
ASCII Character Print      Control PF6
Graphics Print Upright (large)   Control PF7
Graphics Print Upright (small)   Control PF8
Graphics Print Sideways    Control PF9
Printer Form Feed          Control/Shift PGUP
To Stop Print Anytime      Press ESC
A>
```

Figure 1 upright screen dump.

Figure 2 Compressed upright screen dump.

Figure 3 sideways screen dump.

3M DATA CARTRIDGES

DC100A	$11.95	DC1000	$12.25
DC300A	$15.50	DC600HC	$23.40
DC300XL	$18.65	DC615A	$15.50
DC300XLP	$18.85	DC615HC	$17.35
DC600A	$20.75	DC2000	$16.80

Also 10 &20 M.B. Digital Cassettes

Additional Discounts For Larger Quantities

Quanities Less Than 5 Add 5%.

3M diskettes

3M 5¼" & 3½" DISKETTES

SS DD .....$.77 each
DS DD .....$.99 each
DS HD.....$2.25 each
3-½ DS .....$1.99 each

or Less

Minimum 50 Diskettes.

"3480" Tape Cartridges SAVE $$$

3M COMPUTER TAPE

BLACK WATCH 700 SCOTCH 777

"Tape Seal"

700-½-2400....$11.95 777-½-2400.... $10.95
703-½-3600....$18.35

ELII - Self-Threading Cartridge

700-½-2400... $12.50 777-½-2400.... $11.50
703-½-3600... $17.95 1200' & 600' ft. also available
Minimum 10 reels

- RIBBONS
- DISC PACK
- SOUND COVERS
- COMPUTER PAPER
- DISKETTE STORAGE
- LABELS

1-800-457-5461

For Orders Only

In Michigan
(313) 698-1444

MICHIGAN DATA SUPPLY INC.

10671 HIGHLAND RD. MILFORD, MI 48042

Minimum order $25.00. A discount for 300 or more diskettes. Add 10% for less than 50 diskettes. **Shipping & Handling:** $4.00 per 100 diskettes in Continental U.S.A. Reduced shipping charges for larger quantities.Computer tape & data cartridges F.O.B. Milford, MI. Cash, certified check, C.O.D., add $4.00.

Sanyo/IBM BASIC Programmer's Toolkit

by Fred Blechman

"Where were you when I needed you, David?" That's what I felt like telling David Snyder, author of the *BASIC Programmer's Toolkit*, and owner of MVP Software, after running his Toolkit. Although written specifically for the Sanyo MBC 550 series of MS-DOS machines, most of the seven programs in this "toolkit" also run on the IBM PC and most compatibles like the Tandy 1000 and Taiwanese clones.

Background

For the first couple of months after getting my Sanyo MBC 550 in January 1984, I struggled trying to program it in BASIC. Sanyo BASIC is just enough different from some other Microsoft BASICs to cause problems. Then I graduated to trying to convert IBM PC BASIC programs to Sanyo BASIC—and this can generate enough frustration to make a grown man cry!

At that time there were very few utility programs for the Sanyo. I vainly looked for a utility that would list all variables and line cross-references in a Sanyo BASIC program. These were available for the IBM PC, but would not run on the not-quite-IBM-campatible Sanyo MS-DOS. And, although the Sanyo was disk-format compatible with an IBM PC, Sanyo BASIC refused to LOAD an IBM BASIC program.

I found ways around this. Compaq BASICA would LOAD an IBM BASIC program into Sanyo memory, and I could then SAVE it in ASCII. Then it would LOAD in Sanyo BASIC—but probably would not RUN because of dialect differences between the two BASICs. More frustration.

I fought with these incompatibilities, resloved them through sheer persistence, and wrote a book for Sanyo users. (Ed: *Sanyo MBC 550/555 Beginner & Intermediate Guide*, 361 pages with 56-program disk, available from author for $30.)

About two years later I finally found a compiled cross-reference program that would run on the Sanyo, and reported on this in *Computer Shopper* (*Refer: A Programming Cross-Reference*, May 1986, Page 80). This worked, and also produced a formatted LISTing, but my review reported some negatives (most of which have been corrected in a later version of Refer.)

BASIC Programmer's Toolkit

I recently received the BASIC Programmer's Toolkit for review. Boy, I wish I had some of the programs in this package two years ago! Included in this package are the following:

(1) BASIC CROSS-REFERENCE—Prints a table listing all variables and line numbers in a Sanyo or IBM PC BASIC program that has been SAVEd in ASCII.

(2) BASIC FILE LISTER—Prints a formatted listing of Sanyo or IBM PC BASIC programs SAVEd in ASCII.

(3) BTA CONVERTER—Automatically converts IBM PR BASIC (or GW-BASIC or BASICA) tokenized programs to ASCII files readable by Sanyo BASIC.

(4) PF-DEFINE: Allows you to re-assign the 20 Sanyo PF programmable function keys, while in BASIC, and store

continued on next page

If you are shopping for a clone, here is the one that stands out from the crowd.

- HARDWARE COMPATIBILITY
- SOFTWARE COMPATIBILITY
- DATACOM CERTIFIED
- BEST PRICE: $499 COMPLETE

$1299 for AT* compatible

The *Logical* ATC (with optional monitor and monographic video adapter)

FREE!!
WITH EVERY PURCHASE
-96 HOUR BURN-IN
-CONFIGURED THE WAY YOU WANT.
-200 PROGRAM LIBRARY
-"HOW TO" GUIDE TO NETWORKING
-TECHNICAL SUPPORT PASS CODE
-270 DAY WARRANTY

CALL THE AUTOMATED ORDER LINE:
MC/VISA ACCEPTED- NO SURCHARGE
1-203-877-6991

Clones and IBM standards
What is true compatibility?

How can these machines give "more compatibility per dollar?"

These machines have been "datacom certified." That is, they have been rigorously tested in the most difficult of all environments: networking and data communications.

Hardware compatibility is perhaps the most important aspect of compatibility. This is where the *Logical* PCs excel.

Of course, software compatibility is important too. At this time not one mainstream IBM*PC software package has been found that will not run on a *Logical* PC.

The *Logical* XTC is an IBM PC XT* compatible, that features super-reliability and a 96-hour burn-in session before shipment. 512K RAM is standard, as is one 360K floppy drive. An "AT" style keyboard, and a quiet 135W switching power supply is included. The sale price for this model (LGX-XTC) is $499.

For a second 360K floppy drive add $99. For the optional 21 megabyte hard drive, add $449. Add $529. for 31 meg. For the clock/calendar, serial, parallel, game port board, add $75. $39. brings the memory to 640K total.

The *Logical* ATC is an IBM PC AT* compatible that operates at 8mHZ, and is datacom certified at this speed. The ATC sports the same hardware and software compatibility as the XTC, but operates 3 to 7 times faster. It is XENIX and file-server compatible for all major network software.

The ATC has a promotional price of $1295. (model LGX-ATC.) Included at this price is: 640K RAM, one 1.2 megabyte floppy drive, extra-heavy-duty case, quiet 200W switching power supply, with multi-speed fan, keyboard, and 16-bit hard disk controller, with cables.

One or two optional Winchester hard disk drives can be added. $675 gives you a high speed(28-39 ms.), full height 31 megabyte drive, tested and installed. This drive has magnetic heads that automatically retract if power is lost.

Also optional is a serial/parallel port for $75. Add $109 for a 360K auxilliary floppy drive.

And for both the models, MS-DOS, with GWBASIC is available for $79. PC-DOS 3.2 (no BASIC manual) can be used for $85.00

Monochrome graphics card (Hercules compatible), with parallel port is $79. Hi-res 720x350 amber monitor, with tilt base is $125.

To extend warranty to 2 years, add 12% of hardware total.

Logix™
MICROCOMPUTER
TELEPHONE 203-8776991
PO BOX 3574, DEPT CS10
131 NAUGATUCK AVENUE
MILFORD, CT 06460

©1986 Logix Microcomputer *registered trademarks

Logical and Logix logo are trademarks of Logix Microcomputer.
Shipping and insurance billed at exact cost

Toolkit continued from page 197

them on disk for future use. You can have several PF files. Requires Sanyo BASIC.

(5) NUMBER ERASE—Produces an ASCII output file in which all non-referenced line numbers in an IBM PC BASIC or Sanyo BASIC program are eliminated, for more efficient compiling.

(6) NUMBER REPLACE—Replaces line numbers in a program processed by NUMBER ERASE.

(7) SB PREP—Discovers illegal, out of place, and unreferenced line numbers and compresses IBM PC and Sanyo BASIC programs to save space, and speed loading and execution.

Hands-on Testing

Since I don't compile programs, I didn't try out NUMBER ERASE or NUMBER REPLACE. Neither did I test SB PREP, which is intended to clean-up BASIC programs created or changed on a word processor, and to pack the code for smaller size and faster execution. If these programs worked as well as the other four in this package, there should be no problems.

I did test the other four programs in the Toolkit, and found them extremely useful. In fact, after using the Toolkit on my Sanyo for a couple of hours to test it for this review, I ended up doing a major job I had put off for two years! I used BTA CONVERTER to convert 15 IBM PC BASIC programs (my AMBIZ-PAK of programs for Amway Product Distributors) to ASCII, then got a formatted LISTing of each with BASIC CROSS-REFERENCE. I now have a complete set of AMBIZ-PAK listings and variable cross-references for each program in a notebook, for reference when a user calls.

I was very pleased with how smoothly these programs operated. They were not particularly fast, but were sufficiently prompted to make for easy use.

I had difficulty converting one IBM PC BASIC program to ASCII with BTA CONVERTER. I later discovered a non-ASCII control code had somehow gotten into the BASIC listing. I removed this character (which shows as a smiling-face character on a Sanyo screen) and the BTA CONVERTER worked as it should.

Incidentally, since these BASIC programs are converted to ASCII, they can be viewed or printed from MS-DOS with the TYPE or PRINT command, or LOADed into Sanyo BASIC and printed with LLIST. That's how I found the smiling-face that shouldn't have been there.

The BASIC FILE LISTER produced neatly formatted listings with word wrap and indenting for long lines, as well as separate lines for each multiple or ELSE statement. You can set the left and right margins, and lines per page, and each page has a number and header.

The BASIC CROSS-REFERENCE program produces numbered pages, with the filename at the top of each page. Every variable (simple, string or array), and each line number referenced elsewhere in the program, is shown in (usually, but not always) alphabetical or numerical order in a left-hand symbol column, followed by all the line numbers in the program where they appear. No keywords or text words are referenced. To make it easier to read, every three variables or line number references are followed by a dotted line across the page. The listing ends by printing a count of program lines, bytes, symbols and references. Figure 1 is an example cross-reference printout for 3968 byte 76-line program that has 45 references to 16 symbols or line numbers.

```
FILE: TIMER.BAS

SYMBOL          REFERENCE LINE
-----------------------------------------------------------------------
  A$            230   240   350   440   490   640   730
                750
  250           640   740   750
  450           510
-----------------------------------------------------------------------
  480           440
  490           500   530
  510           490
-----------------------------------------------------------------------
  540           240
  750           500
B$              220   330   360
-----------------------------------------------------------------------
C               400   450   480
D$              140   370   380   450
D               400   460   470
-----------------------------------------------------------------------
I               290   370   400
M               310   380   480
P               270   370   440   460
-----------------------------------------------------------------------
T               440   470   510   520
=======================================================================
LINES: 76   BYTES: 3968   SYMBOLS: 16   REFERENCES: 45
```

FIGURE 1 Sample Cross-Reference

I also tested out the PF-DEFINE program, and found it worked easily for words of up to eight characters. I was not, however, able to add a control code as one of the characters, such as RUN+CHR$(13). This is being looked into by the program author, since this capability should be provided.

Documentation

The 20-page program documentation is very good, and is divided into an introduction and three chapters. The introduction explains the purpose of each of the seven Toolkit programs, and how to make a DISKCOPY of the supplied non-system disk. The Toolkit programs are not copy protected, and can be transferred to a system disk, although this convenience was not mentioned in the documentation.

Chapter 1 describes how to use each of the seven programs. While the text here was generally easy to follow, I found a couple of things omitted or not clear. The author has been notified and by the time you read this, corrections will be provided with the

continued on page 200

1st Place Computer Systems
13422 N. Cave Creek Rd.
Phoenix, AZ 85022
602-867-9897

CALL TOLL FREE 1-800-841-2748

Hi, I'm Joan,
Summer is winding down and it's time to think seriously about business again. We are here to serve you with low prices, fast and courteous service.
Prices change quickly in our business, so call us and we will try to give you better pricing.
Thanks & God Bless,
Joan

ALTOS

ALL SYSTEMS HAVE XENIX RUNTIME

486-25-1	$3660	1086-80	$12,483
586-40	$4480	2086-2	$14,732
586-T40	$5225	2086-4	$16,943
568-T80	$6245	**SOFTWARE**	
986-T40	$6245	486/586/986	
986-T80	$7270	OFFICE MANAGER	$769
886-25	$5135	INFORMIX D-DASE	$769
886-T25	$6239	ALTOS ACCOUNTANT	$2649
886-T80	$8450	BOOSTER PAK	$379
1086-1	$11,040	EXEC. WORD. PROC.	$379

PC SYSTEMS		TERMINALS	
AMERICAN XT CLONE	$875	ALTOS III	$579
AT CLONE	$1879	ALTOS IV	$385
AT & T 6300 +	$CALL	QUME 101 A	$317
IBM-PC/XT/AT	$CALL	QUME 101 G	$295
ITT-XTRA 2DR. MONO	$CALL	QUME 119 G	$445
TELECAT 286AT	$CALL	TELEVIDEO 955	$429
WYSE PC - DR. MONO	$1150	WYSE 50	$415
ZENITH	$CALL	WYSE 85	$449
		WYSE 30	$290

PRINTERS

STARMICRONICS 1210	$189	JUKI 6100	$335
QUADRAM LASER	$2899	JUKI 6300	$649
CITIZEN MSP 10	$265	OKIDATA	$CALL
CITIZEN MSP 25	$475	PANASONIC 1091	$244
PREMIER 35	$495	PANASONIC 1592	$438
DIABLO 635	$1075	TOSHIBA 351	$1089
EPSON	$CALL	NEC 3550	$779

DISK DRIVES & MODEMS		EXPANSION CARDS	
SEGATE 20 MEG	$449	EVEREX EDGE	$244
TEAC 55 BV	$105	GRAPHIC EDGE	$279
20 MG HD. DISK CARD	$625	VUTEK TWIN	$329
TALLGRASS	$CALL	HEXACE AST CLONE	$119
HAYES 1200	$369	HEXACE MONO GRAP	$185
HAYES 2400	$579	HERCULES COLOR	$149
		HERCULES GRAP MONO	$309

SOFTWARE

D BASE III	$393	SIDE KICK	$39
REFLEX	$89	CROSS TALK XVI	$108
R-BASE 5000	$353	TWIN	$59
WORDSTAR PROF	$248	FRAMEWORK II	$405
WORDSTAR 2000 +	$292	ENABLE	354
WORD 3.0	$239	NORTON UTILITY	$65
MULTIMATE	$272	NORTON COMMANDER	$49
LEADING EDGE WORD	$39	EXCEL	$225
NUTSHELL	$45		
WORDPERFECT	$223		
VOLKSWRITER 3	$153		
MULTIPLAN	$119		
V.P. PLANNER	$63		
TURBO PASCAL	$49		
MANAGING U MONEY	$121		

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.
SEND CASHIERS CHECK OR MONEY ORDER.
PERSONAL CHECK HOLD FOR 2 WEEKS.

Chip Specials

DYNAMIC RAMS			
256K	(256K × 1)	150 ns	2.75
256K	(256K × 1)	120 ns	2.90
256K	(64K × 4)	150 ns	4.25
128K	(128K × 1)	150 ns	4.40
64K	(64K × 1)	150 ns	1.20
64K	(64K × 1)	120 ns	1.35
STATIC RAMS			
6264LP-15	(8K × 8)	150 ns	3.15
EPROMS			
2732A	(4K × 8)	250 ns	4.05
2764	(8K × 8)	250 ns	3.35
2764	(8K × 8)	200 ns	3.75
27C64	(8K × 8)	200 ns	5.05
27128	(16K × 8)	250 ns	3.65
27256	(32K × 8)	250 ns	5.25
27256	(32K × 8)	200 ns	5.65
PROCESSORS			
C8087-2	8 mHz		150.00
C8087	5 mHz		115.00
V-20	8 mHz		12.00
V-30	8 mHz		14.00

MicroTech
P.O. Box 27083
Seattle, WA 98125
(206) 364-2209, 8-6 Mon.-Sat.

Price shown for cash. Prices subject to change. Call for current prices & volume discounts. Shipping & Handling: UPS ground $2.00, air $5.00 (under 1 lb.). Master Card/Visa add 3%. Wash. residents add 7.9% sales tax. Satisfaction guaranteed.

WAREHOUSE DATA PRODUCTS

Call for programs not listed.

Technical and Other Information (602) 246-2222
TOLL-FREE ORDER LINE 1-(800)-421-3135

MULTITECH COMPUTERS

IBM PC compatible

SPECIAL SALE!

$995

INCLUDES:
- DUAL 360 K DRIVES
- 256K MEMORY
- 5 EXPANSION SLOTS
- GRAPHICS BOARD (Similar to Hercules Graphics)
- 4 OR 8 MHZ KEY SELECTABLE MONO MONITOR
- TIME OF DAY CLOCK WITH BATTERY BACK UP
- PARALLEL AND SERIAL PORTS
- DOS 3.1
- GW BASIC ($39 Additional)
- 6 MONTH WARRANTY

We have over 1000 Software and Hardware items in stock. Shipments on almost all items within 24 hours! No charge for MasterCard or Visa!

FREE! UP TO $100 SOFTWARE FREE!

With every purchase over $100.00 you can select one of the following MS/DOS diskettes at no charge. 1. Blueberry I - 54 basic utility programs includes printer select, graphic generation, etc. **Retail value $10.** 2. Blueberry II - includes a banner generator, a label maker and a checker game (requires graphics card). **Retail value $10.** 3. Print Select program -Assembly language program to select different type fonts, etc., or make your printer function as a correctable typewriter - perfect for envelopes, notes, etc. Adaptation modules for popular printers included and capability to adapt any printer. **Retail value $40.** 4. Deposit Program Compiled DBase to list and total cash, check, bank card for bank deposit and keeps history - Developed for our corporate use - Super Program! (source code available). **Retail value $40.** Select an additional diskette for every additional purchase of $150 or purchase over $500 and receive all four at no charge. Please indicate choice(s).

—— DATA BASE MANAGERS ——

Clipper	$334
Clout 2	$117
Condor III	$310
Fox and Geller Quickcode	$138
Fox and Geller Quickreport	$138
Knowledgeman II	$290
Nutshell Filer	$59
Powerbase 2.2	$212
PFS: File	$78
Q&A	Call for price
RBase System V	$332
Reflex	$85
Think Tank	$92
Tim IV	$139
Turbo Prolog	$56
Wordtech DBase 3 Compiler	$419

—— WORD-PROCESSING ——

Easy (MicroPro)	$88
Leading Edge w/Merge/Spell	$75
Microsoft Word 3.0	$252
Multimate 3.31	Call
Multimate Advantage	Call
Peachtext 5000	$145
PFS: Write	$78
Turbo Lightning	Call
Volkswriter 3	$139
Webster Spell Checker	$37
Word Perfect 4.1	$195
Wordstar	$162
Wordstar Propac	$233
Wordstar 2000	$233
Wordstar 2000+	$278

—— SPREADSHEETS ——

Lotus	Call
Microsoft Multiplan	$108
PFS: Plan	$78
Supercalc 4	Call
VP Planner	$49

—— ACCOUNTING ——

BPI Accounts Payable	$299
BPI Account Receivable	$299
BPI General Accounting	$299
BPI Payroll	$299
Cyma	Call
Dollars & $ense	$94
Tobias Managing Your Money	$94

TCS. Big Four equivalent of Peachtree Series 4 - Specially augmented and customized for your IBM PC Terminal and Printer - GL, AR, PA, AP, CP/M-80, CP/M-86 for PC XT, DOS 1.1, 2.0. Each Module **$65** For all Four **$249**

—— INTEGRATED ——

Ability	$59
Enable	Call
Smart Software	Call

—— TRANSFER PROGRAMS ——

Crosstalk XVI	$89
Direct Access	$59
Hayes Smartcom II	$88
Microsoft Access	Call
Move-It	$79
Remote	$89

—— GRAPHICS ——

Chartmaster	205
Energraphics 2.0	$269
Fancy Font	$129
Fontrix	$99
Microsoft Bus Mouse	107
Microsoft Flight Simulator	$28
PC Mouse W/DR Halo II	$106
Printshop	$33
Signmaster	$132

—— UTILITIES ——

Carbon Copy	$115
Copy II PC	$19
Copy II PC Board	$79
Copywright	$42
Desqview	$59
Fastback	$85
Microsoft Windows	$56
Norton Utilities 3.1	$49
PC Tools	$19
ProKey 4.0	$72
Sidekick	$32
Superkey	$39

—— PROJECT MANAGEMENT ——

Microsoft Project	$219
Super Project Plus	$239

—— LANGUAGES ——

C Food	$85
C Sprite	$95
Lattice C Compiler 3.0	Call
Run C Professional	$135
Microsoft C Compiler	$249
Microsoft Fortran	$195
Microsoft Macro Assembler	$84
Microsoft Pascal Compiler	$166
Microsoft Quick Basic	$55

INCREDIBLE VALUE!

Nationally advertised boards for IBM PC and most compatibles at giveaway prices.

1 year warranty

Keyboards (similar to 5151)	$79
Monochrome Board w/Prtr. Port	$79
Graphic Board w/par port (similar to Hercules Graphics)	$85
Expansion Board 0 to 576 K	$42
Multifunction w/game port (similar to AST Six Pac)	$89
Four Drive Floppy controller	$45
Color Card without printer port	$79
Color Card with printer port	$89

—— HARD DRIVES ——

Bernoulli 20 MB w/cont.	$2077
Filecard 20 MB	$555
Maynard 20 MB Hard Card	Call
Seagate 20 MB Int. w/cont.	$399
Seagate 30 MB Int. w/cont.	$479
Seagate 30 AT Int.	Call

—— MODEMS ——

Everex 300/1200	$120
Hayes 1200	Call
Hayes 1200B	Call
U.S. Robotics Courier 2400	$359
U.S. Robotics Password 1200	$180

— PRINTERS —

CITIZEN	
MSP-10	$285
MSP-15	$385
MSP-20	$325
120-D	$185
Premiere 35 Daisywheel	$469
CANNON Laser	$1939
EPSON - Call on all models	
NEC	
8850	$1098
P5 Parallel	$995
P5 XL	$1126
Elf 360	$398
OKIDATA - Call on all models	
PANASONIC	
1091	$235
1092	$299
1592	$435
KXP3151	$399
STAR MICRONICS	
LV1210	$169
NB15	$975
NX10	$232
SG15	$365
SR15	$585
TOSHIBA	
P351	$969
P341	$768
P321	Call

—— MONITORS ——

Amdek 310 A	$142
Amdek 600	$395
Magnavox Color RGB	Call
Multitech Color RGB	$259
Nec Multisync	$565
Princeton Max 12	$159
Samsung TTL Amber	$72
Samsung TTL Green	$70

—— BOARDS ——

AST Advantage	$329
AST Premium	$359
AST Sixpac (384K)	Call
Hercules Color Card	$145
Hercules Graphics Plus	$182
Intel Above Boards	Call
J Lazer (Tall Tree)	Call
J Ram III (Tall Tree)	Call
J Ram III AT (Tall Tree)	Call
Paradise Auto Switch EGA Card	$359
STB Chauffeur Board	$185
STB EGA Plus	Call
STB Mono	Call
Vega Video	$375

—— RAM ——

64K 150 NS Chips (set of 9)	$10.50
256K 150 NS Chips (set of 9)	$27
Intel 8087-2 Chips	Call

—— COMPUTERS ——

ABBOTT TURBO PC
IBM Compatible Computer, 4.77 or 7.47 key selectable, AT style keyboard, 640K, dual drive, 135 watt power supply $599
or with 20 MB Seagate $970
6 month limited warranty

Corona PC ..... Call

Multitech 900 Accel
IBM AT Compatible 512K, expandable to 1 MB on the mother board, one 1.2 MB drive, 195 watt power supply, MS/DOS 3.1, clock, 6 or 10 MHZ key selectable, soft white monitor, AT style keyboard, 1 year (TRW) warranty ..... Call

Sharp Portable ..... Call

SPERRY PC Mono, 256K, dual drive, serial port, clock, MS/DOS 2.11 ..... Call

—— ACCESSORIES ——

AB Parallel Print Switch w/cables	$75
IBM 135 Watt Power Supply	$59
Mini Micro Parallel Print Buffer	$69

TERMS: Add 3% for C.O.D. orders. Shipping on most software is $5.00. AZ orders +6.7% sales tax. Personal checks - allow fourteen (14) days to clear. Prices are subject to change. We accept purchase orders from authorized institutions. All returns are subject to a restock fee. We do not guarantee compatibility.

Hours 7 A.M. to 5:30 P.M. M.S.T. - Monday thru Friday
Saturday 10:00 A.M. to 3:00 P.M.

No Charge for MasterCard or Visa

WAREHOUSE DATA PRODUCTS

Technical & Other Information (602) 246-2222
TOLL-FREE ORDER LINE 1-(800)-421-3135

WAREHOUSE DATA PRODUCTS
2701 West Glendale Ave., Suite 6
Phoenix, AZ 85051

The TI Forum

by Ronald Albright
& Jonathan Zittrain

I was in trouble. My best planet, 522.a. had been left undefended and I was in danger of losing it. "You have messages waiting," confirmed the battle computer, as I prepared to assume command of my ship. Sure enough, planet 522.a had left an impassioned plea for help.

I throttled up past light speed to get to 522.a as soon as possible. Unfortunately, Ming the Merciless, in command of a battle cruiser that could consume quite a few scoutships like the one I was flying and still call it a light meal, had spotted me zipping across the galaxy. "Message from ship number 9082," declared the computer, It reads: "I have chosen you for a space duel. Eat photons." No sooner had I loaded my ship's own meager photon torpedo tubes when my ship was knocked silly by several of Ming's industrial-quality missiles. The resulting battle was not pretty, especially since I succeeded only in dumping my remaining fuel instead of attempting to flee or fight Ming. By the time I had returned with a brand new scout ship (my old one having been reduced to galactic metal chunks) I was informed that planet 522.a had surrendered in order to save civilian lives. It was not one of my best evenings as an interplanetary entrepreneur.

My experience with Ming actually happened. I really did own (and then lose) planet 522.a. At least, it certainly seemed that way. I was actually hooked into a nationwide computer network, the CompuServe Information Service, through my much smaller TI-99/4A computer, and was competing with real people.

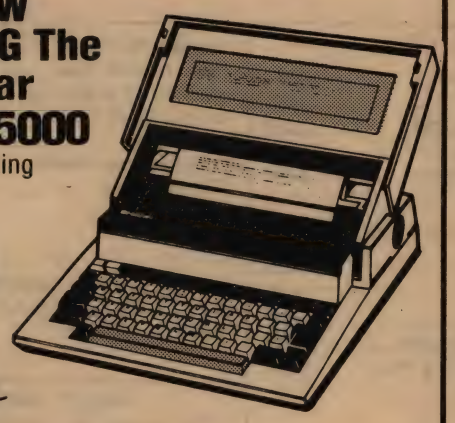
In past articles the wonders of telecommunications have been discussed. From the simple act of connecting one's computer to a phone line, the concepts of electronic bulletin board systems and information retrieval networks were born. Through large computers that could have hundreds of people busily interacting with each other simultaneously came the electronic conferencing concept as well. One user could type a message, and have it instantly transmitted to the other users awaiting it.

Multi-player gaming takes the conferencing process one step further. The game described above was "MegaWars III," developed by Kesmai Corporation and licensed to CompuServe. Says John Taylor of Kesmai, "The idea of multi-player games is to provide users with an environment, which they can then act within." In the case of MegaWars III, the environment is that of a galaxy. Commands are available to the user which enable control of his or her "spaceship," as well as to manage acquired "planets." The multi-player concept comes into play when users can actually "see" the ships and planets of others, and proceed to capture or destroy them, as Ming so mercilessly did to my own ship. The presence of a real-time radio aboard each ship allows users to talk to each other, trading hints or making

continued on page 201

1 LIQUIDATOR IN CALIFORNIA SINCE 1976 — COMPONENTS EXPRESS

WE ARE NOW LIQUIDATING The Very Popular SHARP PC5000
Along with supporting peripherals and software, at
unheard of prices



	LIST PRICE	LIQUIDATION PRICE
PC5000 Includes 128K RAM, PC DOS, GW Basic, Battery Pack	$1995	$395
PRINTER CE510P	$395	$95
MODEM CE510T	$349	$85
64K RAM EXP. Cartridge, CE100M	$80	$40
128K BUBBLE, Cartridge, CE100B	$130	$65
SOFTWARE		
PF & FILE/ REPORT Sold on diskette, may be copied to 2 Bubbles, 1 for PFS, 1 for Report	$125	$65
SUPER-COMM Sold on diskette, may be copied to 1 Bubble	$80	$40
SUPERWRITER/ EXEC. On Bubble	$305	$150

EVEN BETTER PRICES BUNDLED!!

BUNDLE A — PC5000, 128K RAM, PC DOS, GW Basic, Battery Pack, Printer, 2 Bubbles — LIST $1245 — $595

BUNDLE B — PC5000, 128K RAM, PC DOS, GW Basic, Battery Pack, Printer, 2 Bubbles, Modem — LIST $1410.00 — $655

BUNDLE C — PC 5000, 128K RAM, PC DOS, GW Basic, Battery Pack, Printer, 2 Bubbles, Modem, Superwriter — LIST $1715 — $755

AND...EVEN AT THESE PRICES YOU ARE STILL PROTECTED BY FACTORY WARRANTY

1310 EDINGER • SANTA ANA, CA 92705
(714) 558-8840 • (800) 432-8459

Toolkit
continued from page 198

Toolkit. Incidentally, the present Version 2.00 clears up some bugs that appeared in an earlier version.

Chapter 2 is a very valuable summary of differences between IBM BASICA (sometimes called GW-BASIC) and Sanyo BASIC. This chapter alone is worth the price of the Toolkit if you have been struggling to convert programs to or from Sanyo BASIC. I've devoted a chapter in my Sanyo book (and two articles in a Sanyo magazine) to this subject, and found things in this chapter I was not aware of!

Chapter 3 offers patches to correct bugs in the IBM BASIC Compiler BASCOM.CMD, BASCOM.LIB and BASRUN.EXE programs. Compiling a BASIC program speeds it up considerably (sometimes 30 times or more), and, within limits, makes it transportable between MS-DOS machines. I've never compiled a progran, so I can't comment.

The Bottom Lines

If you do any BASIC programming with a Sanyo 55X, especially if you are translating to or from IBM PC BASIC, this Toolkit will be immensely useful. An IBM (GW-BASIC) version of Toolkit is available if you do BASIC programming and have no desire to support Sanyo BASIC. It has five programs (PF-DEFINE and BTA CONVERTER, which are strictly for the Sanyo, are omitted), with the additional advantage that the IBM version of BASIC CROSS-REFERENCE is able to read both ASCII and tokenized files.

BASIC Programmer's Toolkit
Version 2.00
MVP Software
1035 Dallas SE
Grand Rapids, MI 49507
Phone: (616) 245-8376
Price: $39.95 + $3.00 shipping

JVC DISKETTES
DS/DD w/sleeves & labels ..... $ .50 ea.
NO MINIMUM
Call for quantity discounts!!
100% certified Error Free!
LIFETIME WARRANTY

COPY HOLDER w/swing arm, non-magnetic, w/rubber guide $15.00
Extra Tyvek Sleeves ..... $ .05
COLOR DS/DD Diskettes (12 colors) ..... $ .75
(Includes sleeves & labels)
SONY Brand 3.5" SS/DD $15.00
SONY Brand 3.5" DS/DD $25.00
ComPro Brand HIGH DENSITY (Box of 10) $18.00
DD-100L - Holds 100 Diskettes, Hinged lid, lock & key ..... $ 9.00
DX-100B - Holds 100 Diskettes, Hinged lid, lock & key $10.00
(Same as DD-100L but sideways)
SRW Library Case, hard plastic, easel type $1.50
(Red, blue, green, yellow, black, grey, beige)

RIBBONS

	Black	*Color
Epson MX, FX, RX-80, 85	2.50	3.50
Epson MX, FX, RX-100, 185, 286	4.00	5.00
Epson LQ800	4.00	
Epson LQ1000	5.00	
NEC 8023A, Imagewriter, CITOH Prowriter	3.00	3.50
Okidata 80,82,83,92,93, Star Gemin 10X, 15X	1.25	2.00
Okidata 182,183,192,193	4.00	4.50
Panasonic 1090,1091,1092	4.00	4.50
Toshiba P1340,P1350,1351	3.50	
IBM Proprinter	4.00	
Epson LX80	3.00	4.00
Epson LQ1500	3.50	

*Red, blue, green, brown, yellow, purple, gold, silver, orange
These are brand new ribbons (not refills) and made to manufacturer's specifications.

Call For Other Ribbon Prices
Call For Current Free Catalog!

DATA DYNAMICS
2377-B PACIFIC AVE., LONG BEACH, CA 90806
(213) 424-1172 (Call Collect!!)
(800) 351-7832 Outside Calif.
Shipping 5% of order (min. $2.50) plus $1.90 C.O.D.

TI Forum
continued from page 200

threats.

"The key word is "social," says Lee Winter, a former game operator of "GameOp" for MegaWars III. "People have a topic to discuss, and can discuss it—all while playing the game." Winter commanded the "Death Star," a special ship that enforces a semblance of law for the players. "Users can generally do whatever they like within the bounds of the game, but we try to lend a little bit of support to the new user, who otherwise may be quickly destroyed by the more experienced users."

Taylor agrees. "Certain restrictions are required for playability. The software must take some part in limiting the ability of some of the more ruthless players to take advantage of the new players." A favorite pastime for some players is "Imp hunting," whereby a player hides outside a declared neutral area (an Imperial planet), and shoots at anyone appearing there.

"The game allows for anonymity," says Winter. "Aside from a player's chosen handle, you really can't tell anything about him, her, or it." Such anonymity brings out both the best and worst in people, he states. "It's a chance to sit down and do whatever you like. No one sees the person behind the terminal, and that's a license to be more outgoing and unrestrained. After spending a hard day at the office, straining to be polite to someone you would rather throttle, this is a chance to load and fire a torpedo at him—without really hurting anything except egos."

In this way, the method of communication—clacking away at a computer keyboard and watching the messages from others on a screen—seems to add another dimension instead of taking away one. The fact that one can be wearing pajamas and sipping coffee while in the midst of battle is something entirely new, and worth experiencing.

Tony Savage, known to fellow gamers as "White" in MegaWars III and "Cail" in "Island of Kesmai" (another multi-player game, based around wizards and dungeons instead of planets and lasers) has similar feelings about the multi-player games. "I play them because they're social. There's someone—not just a computer—on the other end, if not a whole group of people," she says. The male/female ratio seems to be heavily in favor of the former, she notes. "I've had other players refuse to shoot at me [in MegaWars III] after they found out I was female. Of course, that doesn't mean I won't shoot at them!"

Multi-player games tend to develop their own personalities. With Island of Kesmai, one can simply zip into the dungeon and fight the computer-generated and -controlled monsters, regardless of the presence of other players. Even the loners can't help but return with "war stories," though, Taylor says. Whether the actual play is performed alone or with a few fellow adventurers, a community spirit inevitably develops. Patricia Fitzgibbons, administrator of the Multi-Player Games Forum (an electronic "hangout" for players on CompuServe where they can leave messages to each other and archive helpful hints), remembers the time that the rather powerful dragon in Island of Kesmai was finally conquered by a small group of players. "Forum members went nuts for days! Everyone wanted to know what happened, who did what, etc. Tales of valor abounded!"

MegaWars III actually has a team structure built into the software. One player can declare himself to be a team leader, name his team, and begin to draft members. A team score is then calculated, and posted along with the scores from other teams. The leader of the top team at the end of a game (MegaWars III games run in four week cycles; most other multi-player games don't have such sharply defined beginnings and endings) is then crowned emperor, sent an actual trophy, and allowed to attach "FE" (meaning "former emperor") to his or her handle. The top individual scorer (scores are based on a combination of combat expertise and planetary management) is then named president, and sent another trophy, says Winter. For Winter, his tenure

continued on page 203

LISTING 1

```
index(s,c)
char *s,c;
{
 int n;
 n=1;
 while(*s) {
     if(*s==c)
       return(n);
     else {
       ++s;
       ++n;
     }
 }
return(0);
}

stncpy(s1,s2,n)
char s1[],s2[];
int n;
{
 int a;
 for(a=0;a<n;a++) {
     s1[a]=s2[a];
     if(s1[a]==0)
       break;
 }
 if(a=n)
   s1[a]=0;
}
```

LISTING 3

```
get_string(buff,n)
char *buff;
int n;
{
 char temp[81];
  /* change this to the max. length of the string */
 int u;
 u=in_string(temp,n);
 if(u==-1)
   return;
 strcpy(buffer,temp);
 return(u);
}
```

LISTING 2

```
in_string(string,cnt)
char string[];
int cnt;
{
 int i,c;
 for(i=0;i<cnt;i++) {
    c=getchar();
    if(c==-1)                /* ctrl-z */
      return(-1);
    if(c==10) {              /* enter */
      string[i]=0;
      return(i);
    }
    if(c=='\b') {            /* backspace */
      i=i-2;
      putchar('\b');
      continue;
    }
    string[i]=c;
 }
 string[i]=0;
return(i);
}
```


BUY FACTORY DIRECT & SAVE

IBM COMPATIBLE

256K/640K 8-SLOT 4.77 MHz MOTHERBOARD	$119
256K/640K 8-SLOT 4.77/8 MHz TURBO MOTHERBOARD - (2-Layers)	$139
256K/640K 8-SLOT 4.77/8 MHz TURBO MOTHERBOARD - (4-Layers)	$169
AT-MOTHERBOARD	$CALL
384K 6-PACK MULTIFUNCTION CARD - (Mem Sckt/Par/Ser/Game/Clk/Cal/Ramdisk/Pspool/Cable)	$85
640K 6-PACK MULTIFUNCTION CARD - (256K or 64K RAM)	$89
MONOCHROME GRAPHICS CARD W/PRINTER PORT (Hercules Comp.)	$79
COLOR GRAPHICS CARD - (RGB, Composite)	$65
MULTI-DISPLAY ADAPTER - (RGB/TTL Mono)	$139
EGA CARD PC/XT/AT - (Fully IBM Compatible)	$CALL
I/O PLUS II CARD - (Par/Ser/Game/Clk/Cal/Sftwr/Cable)	$65
DISK I/O CARD - (Disk Controller + I/O Plus II)	$89
RS232C SERIAL CARD - (1-Port)	$35
RS232C SERIAL CARD - (2-Ports w/Cable)	$45
CLOCK/CALENDAR CARD - (w/Software)	$39
FLOPPY DISK CONTROLLER - (w/Cable)	$39
HARDDISK CONTROLLER	$CALL
HARDDISK/FLOPPY DISK CONTROLLER	$CALL
PARALLEL PRINTER CARD	$25
GAME CARD - (2-Joysticks)	$25
576K RAM MEMO CARD - (1/2 Slot, Ramdisk add $10)	$45
EXPANDED MEMORY CARD - (Lotus/Intel Compat.)	$CALL
EPROM WRITER - (2716[A]-27512[A] w/1 External Socket & Software)	$119
EPROM WRITER - (2716[A]-27512[A] w/4 External Sockets & Software)	$179
286 SPEED PACK - (AT performance on PC/XT)	$CALL
5150 - STYLE KEYBOARD	$65
5151 - STYLE KEYBOARD	$85
5160 - STYLE KEYBOARD - (AT-Style for PC/XT)	$75
150W PC/XT POWER SUPPLY - (Side Switch, 4-Connectors)	$79
PC/XT METAL CASE W/150W POWER SUPPLY	$129
PC/XT MOUSE - (Mouse Systems/Microsoft Compatible)	$69
JOYSTICK - (Self-Center/Free-Floating)	$25
PRINTER OR MODEM CABLE	$10
MEMORY CHIPS	$CALL
AB DATA SWITCH - (Heavy Gauge Shielded Case, RS232 or Centronics)	$49
ABDE DATA SWITCH -(Heavy Gauge Shielded Case, RS232 or Centronics)	$69

APPLE COMPATIBLE

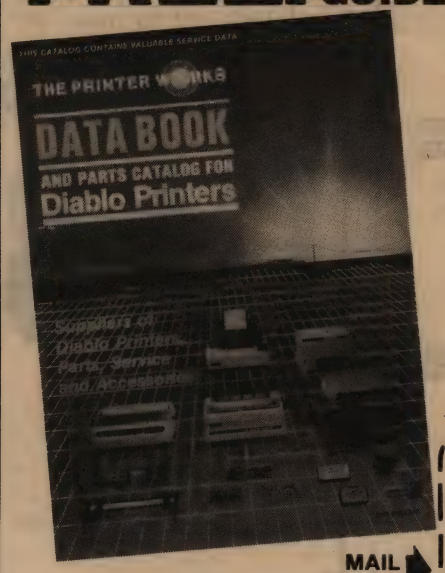
SUPER SERIAL CARD	$89
EXTENDED 80-COLUMN W/64K RAM CARD IIe	$42
80-COLUMN CARD II + - (Videx Compatible)	$49
CP/M Z-80 CARD - (Runs All Versions of CP/M)	$37
16K RAM CARD - (Full 64K on II +)	$35
128K RAM CARD - (II+)	$99
DISK CONTROLLER CARD - (II+/IIe)	$35

• INCLUDE $3 MINIMUM FOR SURFACE S&H
• NYS RES. ADD LOCAL SALES TAX
• CORPORATE & SCHOOL P.O.'s ACCEPTED
• ALL ITEMS WARRANTED FOR 90 DAYS
• RETURNS REQUIRE RMA# & 10% CHARGE
• PRICES SUBJECT TO CHANGE W/OUT NOTICE

MICRO ACCESSORIES CORPORATION
P.O. BOX 4512-C
BAY TERRACE, NY 11360
(718) 428-4943
HRS: 9am-5pm EST MON.-FRI.

• *DEALERS WELCOME*
• *CALL FOR ITEMS NOT LISTED*

FREE! THE MOST COMPLETE REFERENCE GUIDE ON DIABLO PRINTERS.



Not just a catalog, but a valuable source of reference data for those who own or service Diablo printers of any kind. *This manual offers:*

- ***Complete exploded diagrams of Diablo printers and key components***
- ***The most complete parts inventory outside of Diablo itself — including many hard to find parts***
- ***Plus new laser printing systems***

To receive your FREE copy of this comprehensive guide to parts and service of Diablo printers, just fill in the coupon below and send it to:

THE PRINTER WORKS

1961 ALPINE WAY • HAYWARD, CA 94545

OR, CALL TOLL FREE

1/800/225-6116 (Inside California) **1/800/235-6116** (Outside California) **415/887-6116** (Local)

Name _____
Company _____
Address _____
City _____ State _____ Zip _____

MAIL TODAY

Expert Systems Offer Managers Excellent Risk/Reward Ratios

"The wonder is not that thousands of companies are profiting from expert systems... the wonder is that thousands of other companies haven't tried them. They're like companies who haven't discovered photocopiers." The business consultant was commenting on U.S. efforts to catch up with gains in productivity overseas. "I'm amused at companies eager to learn Oriental productivity secrets, while they ignore U.S.-developed and U.S.-perfected expert system technology. That's stooping over dollars to pick up dimes.

"I could understand, if this were a decision that costs millions and immediately affects the whole company—like buying a new mainframe computer. But a company that already owns a personal computer can spend a few hundred dollars for expert systems software, invest a few hundred hours of white-collar time, and create an expert system for evaluation," he continued. "The total risk can be as little as ten thousand dollars—but the reward can be ten or twenty times as much. That's the kind of ratio real managers love to go after."

The reluctance of some companies to get their feet wet in expert systems may be based simply on not knowing how to get started. Accordingly, this article offers a simple step-by-step guide to developing and testing your first expert system. The guidelines are a distillation of the wisdom accumulated by hundreds of organizations that have successfully introduced expert systems into their operations.

STEP ONE
Choose a Problem

This step doesn't cost a cent, but it's a critical decision because the potential of expert systems in your organization will doubtless be judged by the ability of your first system to help solve your first problem. No, it's not a fair test—but that's how the world turns.

Choose a problem that can be narrowly defined. If you're with a large bank, a system for Evaluating the Creditworthiness of Loan Applicants would be, for example, too broad. A home loan to a young married couple requires rather different credit criteria from an industrial-development loan to Brazil. A manageable first stystem might cover Evaluating the Creditworthiness of Applicants for Single-dwelling Home Loans.

Select a problem small enough to be solved, but big enough to intrigue management. It's better to succeed at something simple, than fail at something complex. If your expert system is a demonstrable success at Quantifying Histamine Production in Response to Rhinovirus Infection, then your management might give you a crack at Search Methodology for Finding a Cure for the Common Cold.

Avoid problems that involve perceptions or esthetics. Today's systems can't handle subjective analysis of sensory inputs. You can't tell a computer—as you might tell a commercial artist—"I want a more cheerful yellow." It's hard enough for a human artist to interpret what your subjective impression of cheerfulness in colors might be; computer software can't interpret it at all—unless you can find a way to teach the system what you mean. If you mean "add 10% red to make the yellow cheerful," and you can build that into the program, you might be satisfied. But in general, avoid such problems.

Select a task well-suited to symbolic reasoning. Such tasks are those that have a large number of correct solutions, or that require the use of incomplete or uncertain information. If a task involves only numerical computation, and all the input numbers are available, then conventional computing techniques will handle it quicker and easier than an expert system.

Choose a task that human experts have mastered and agree upon. Most expert systems today are models of the experiences of one person or a small group with recognized expertise in the field. A system necessarily reflects the human experts' school of thought. If a field is very new, or changing rapidly, or controversial, an expert system in that field is apt to generate much more heat than light. Can you imagine the fate of an expert system that assays Ascertaining the Fate of the Dinosaurs?

Find a cooperative human expert. Some subject experts have worked directly with expert system tools, to create systems that embody large portions of their expertise. In this ideal arrangement, cooperation is assured. But most expert systems are still created by a subject-matter expert working closely with a knowledge engineer—a computer programmer skilled in extracting information from the expert and formulating it into computer software. If the expert is not forthcoming and patient, or if the expert is simply too busy to be bothered, the project is doomed before it starts.

Select a problem that can be divided into sub-problems. The large problem Troubleshooting Diesel Engines, for example, is conveniently divided into Fuel Injection, Combustion Air, Control System, Vibration Sources, etc. If your initial expert system tackles Fuel Injection, and it's hailed as successful, then you'll have produced not only the first module for an expert system that embraces the total problem, but also a successful pattern for the other modules.

STEP TWO
Choose the right tools

Choosing the tools begins with deciding whether you will build the system with the help of a commercially available tool or shell, which guides you through the expert system development process, or whether you have the expertise to build the system from scratch using LISP or some other programming language.

Some human experts outside the computer field have struck out boldly, taken a seminar or two covering the use of shells, bought a few hundred dollars worth of software for their PCs, and produced highly useful expert systems. If you have great self-confidence and self-reliance, this is clearly the quickest and least expensive way to give your organization its first glimpse of the potential of expert system—provided you make clear that larger systems not only handle larger problems, but perform many additional important functions.

A shell provides a complete pre-programmed environment that includes a reasoning process, development aids, a user interface, and explanation capabilities. It guides the developer through the process of inserting knowledge about the problem domain. A shell is somewhat analogous to a spreadsheet in conventional computing. A spreadsheet is a programmed format supplied with many different programmed routines—the user simply provides the numbers to fill the shell, and designates which routines (add, divide, insert sub-total) should be applied to which numbers. In effect, an expert system shell also prompts the user to fill-in the knowledge.

Scratch-building using LISP, on the other hand, requires that the developers have considerable expertise in information processing, plus experience with LISP programming.

Ideally, of course, a company should embark upon expert systems with hardware, software, and staff adequate to

continued on page 204

FACIT
NEW USED
PRINTERS

	IBM/Epson	
4509	PAR & OMB 80 col	From $150
	IBM/Epson	
4511	158 cps 80 col	From $200
4528	165 cps 132 col	From $275
4542	2 color	From $500
4544	4 color	From $625
	* No Warranty *	
4560	22 cps 136 col	From $50
	Diablo/Enuation	
4565	40 cps 136 col	From $250
5000	150 cps 132 col	From $175

PLOTTERS

6 pen Ser/par		HP7475 Comp
4550	"A" Size	From $200
4551	"A" & "B" Size	From $400

TERMINALS

w/Printer Port		VT100 Comp
4440	TWIST	From $450

NATIONWIDE SERVICE AVAILABLE
CALL FOR DETAILS:

The Electronic Orphanage
427-3 Amherst Street, Suite 174
Nashua, NH 03063 CS2032
(603) 882-8740 - BBS: (603) 882-9312 8/N/1
M/C - Visa add 3%
C.O.D. add $5.00 S&H Extra

PRESSURE-SENSITIVE, SELF-ADHESIVE, CONTINUOUS, PIN-FEED

LABELS

PRICE EXAMPLE:
3½"X15/16" ONE, TWO, THREE, OR FOUR WIDE $1.92 PER THOUSAND LABELS
MINIMUM ORDER: $25

CALL FOR FREE CATALOG
•COMPUTER LABEL CO.
(PACIFIC TIME ZONE)
• TOLL-FREE NUMBERS
(California)
1 (800) 331-4223
(Continental U.S.A.)
1 (800) 332-4223

TI Forum continued from page 201

as GameOp has provided insights on quite a bit of human nature as the struggle for the titles commences. "It's almost like class warfare. On the top, you have the most experienced players, who are quite serious and organized in their team leadership. They sometimes require team members to have a phone number where they can be reached in emergencies, in case some extra firepower is needed to retain a planet or capture a new one.

"From the top two or three teams, there are then five or six other teams, without a real chance at winning, but who play just for some quick shooting or rampaging. At the bottom there's always the teams started by players who've become a bit overzealous in becoming leaders, when they themselves have only begun to play." Fitzgibbons agrees, declaring that some team members have been associated with their teams for literally years.

As might be gathered from the description of the games, they are quite an investment in time, and since on-line time is charged at an hourly rate, they're also an investment in money. "I suppose I could have put a down payment on a house," pines Oberon, another well-known player. "Then again, I've never had this much fun paying bills."

The structures of the various games also require different minimum investments of time from the players. In MegaWars III, a fairly heavy usage over a four-week period is necessary to win. "The amount of money in one's entertainment budget is definitely a factor," says Lavrenti Kutuzov, an avid MegaWars III player and assistant administrator for the Multi-Player Games Forum. "Those who have the most money can afford to spend the most time playing the game. Some spare time is also needed!" Detailed formulae for planetary management have also been developed, since there are so many variables. The player can become quite serious, if he or she wants to. On the other hand, games like "You Guessed It!" or MegaWars I are not as intense. "I like MegaWars I so much better [than some of the other games]," says Gary Shook (also known as Admiral Arrakis), "because each game there is no more than five or six hours in duration. I can jump in, have my fun, and jump right out again." The type of commitment desired is a major factor in deciding which game to become involved in. "You Guessed It" is a real-time trivia game, where players match wits (with a real "audience" as well) and gain credits for actual prizes. Even in Island of Kesmai, one need only play when convenient. "I think you have to decide what will give you the most bang for your gaming dollar," says one player. "I like to enter a dungeon in Island of Kesmai, meet other players by chance, and then leave whenever I choose."

Whomever the player may be, the comment is always the same: "I don't know what I did before I started playing! To think I actually enjoyed sitting and staring at a TV set! [slight pause, as the speaker realizes that's what he is still doing while playing the games on the computer]. Well, at least here I get to COMMUNICATE with people. I get to forget about everything else for awhile, and really have some fun."

I waited impatiently as the computer digested my command to attack 522.a. I had spent my last amount of galactic money on the attack force, and was determined to recapture the planet. "There is no resistance. The base surrenders!" declared the computer. I leaned back in my chair and took another sip of coffee. It hadn't been such a bad evening after all.

Changing Your Clock...

Found this pearl in the *R/D Newsletter* (Ryte Data, 210 Mountain Street, Haliburton, Ontario, Canada KOM 1S0; $14/year). As usual, the latest issue of this great monthly carried the following information about changing the clock crystal of the TI consoles to speed up console function (and, thus, program speed). As usual, try it at your own risk. But it does work.

"To speed up a standard TI console by approximately 19%, do the following:

Obtain a 14.318 MHz crystal, a one-pole—two-position switch, 3 pieces of wire, about 6 inches long and a soldering iron. Unsolder one lead of the existing 12 MHz crystal and solder in one of the wires. This wire will be the "pole" wire (i.e. it goes to the center connection of the 3 connections on the switch. Solder another wire to the bare lead of the 12 MHz crystal.

One lead of the 14.3 MHz crystal is soldered to the last wire, the other lead is soldered on the 12 MHz's lead that is connected to the PC board. In other words, all that is being done is a switch from one crystal to the other via the switch. The two wires coming from the crystals are simply soldered to the switch so that in one position the 12 MHz is selected and in the other the 14.3 MHz crystal is selected. Simple, heh? It turns out the wire lengths, type, etc. is not critical. I used 22 gauge solid wire 6 inches long and a mini-toggle switch. Here comes the neat part: It is possible to switch clock speed while the program is running! (at least in BASIC as that is all I have tried so far...). The hardest thing is trying to find a good location for the switch. I put mine peeking out of the cooling slots on top of the console."

Being the usual cynic that I am, I asked one of the world's greatest TI gurus, Paul Charlton (author of Fast-Term and currently a major force in developing the new Myarc computer), about this hocus-pocus. Paul had the following comments:

"Well, changing the crystal is fairly easy, I think I got my crystal from a Radio Shack store...16.000 MHz...problems you may see with this modification:

1) Some programs do i/o to the VDP chip too quickly, and they'll generally screw up...though 'tis no worse than my 16-bit modification.

2) A more serious problem: the RS232 baud rates get changed by a factor of 33%...I had to special modify a version a Fast-Term to take this frequency change into account, also this modification only works on consoles which have a 12.000 MHz crystal to start."

Paul further said that the oldest consoles had a 48 MHz clock crystal and those after early 1983 had the 12 MHz crystal. The clocks speed should be clearly printed on the crystal. Again, do the modification only if you understand what you are doing. Thanks to Bruce Ryan at Ryte Data and Paul Charlton of Myarc for that information.

More On c99...

I have been totally overwhelmed at the response to the c99 information presented in your TI Forum. Your letters have been great. I have to insist, though, that if you want a personal reply, you must send a self-addressed, stamped envelope. We promise that IF you do that, we will write back. The c99 material has been very popular and we appreciate your letting us know you like it. We do plan to continue our support of this language in the future.

continued on page 205

TECHNOLOGIC SYSTEMS
1060 ARUNDEL AVE.
WESTERVILLE, OHIO 43081

Buffered Products
up to 512K

Serial-to-Parallel Converters
Parallel-to-Serial Converters
Serial-to-Serial Converters

- Interface any computer to any printer (RS232 or Parallel)
- Support for all protocols; X-ON/X-OFF; etc.
- IBM, DEC, Apple, etc.
- Custom configurations available

Serial-to-Parallel starting at **$79.95**

Interface Cable Available for Most Computers
DEALER INQUIRIES INVITED
PHONE 614-890-6960
For technical information call after 6:00 P.M. Eastern Time
30 Day Money Back Guarantee
Shipping and Handling add $3.00 / COD add $2.00

WHEN WHOLESALERS WHOLESALE THEY CALL US WHY DON'T YOU?

DEALERS WELCOME

AMERICAN COMPUTER RESOURCES, INC.
39 DAVENPORT STREET
STAMFORD, CT 06902
(203) 357-9024

* IBM * COMPAQ * AT&T *
* EPSON * SEAGATE * TOSHIBA *
* AMDEK * FOUNTAIN * IRWIN *
* OKIDATA * PGS * AST *
* HERCULES * SYSGEN *
* MANY MORE *

* HUGE INVENTORY *
* FAST DELIVERY *

Expert Systems continued from page 202

handle its final needs—not just its early work. But for those few of us who don't live in an ideal world, a small start is better than a big decision interminably postponed.

Here are the basic factors to consider when choosing among the many systems available:

Costs: The range is from a PC with a few hundred dollars in software, to an $80,000 LISP machine with $50,000 in software. Don't dismiss the PC approach as inadequate for what you perceive to be a terribly complex class of problems: many human experts who approached their first expert system feeling that even a small area of their expertise was too overwhelmingly complex to be expressed in a thousand rules, have quickly found ways to express their approaches in a few hundred rules. And since TI's Personal Consultant expert systems shell software, for example, can handle up to 400 rules at a time, it can handle a very powerful program and still have reserve capacity for knowledge to be added later.

Problem Complexity: If you know your classes of problems will outstrip the capacities of PCs, or you know that your organization will inevitably develop expert systems for many facets of your operations, then tool kits designed for LISP machines or for large conventional computers are indicated.

Input and Output Requirements: Consider special requirements peculiar to your kind of business. If your final expert system must access a data base, or receive input from sensors and other instruments, or must generate drawings on paper, for example, you will need more-complex tools.

STEP THREE
Get the help you need before you need it

In the last few years, there has been a sudden proliferation in the kinds and number of organizations that can assist you in getting started in expert systems. Many of them are overloaded, though, so you may want to begin engaging with them soon, to reserve a place in their queue:

Internal: If you're part of a large organization, chances are your management information services operations have experienced LISP programmers and knowledge engineers who can help you.

External Training: Most AI software and hardware producers offer classes ranging from one-day orientations to weeks of hands-on experience. They can save you many hours that you'd otherwise spend on hit-or-miss experimentation. Several companies, like TI, offer certain training classes free as part of selected software packages.

Consultants: Competent consultants are now available, from both the academic and business worlds. Most will act as advisors, or will take over the turnkey job of producing an expert system for you. In addition, several computer companies including TI offer knowledge engineering services. The obvious advantages of using consultants is that they enhance your chances of success, get you started in the right direction quickly, and help you produce your first expert system fast.

STEP FOUR
Build a simple demonstration system

Most expert systems developers who have real-world experience agree: The best approach is to create a rough-and-ready prototype system as a first step. Don't worry about how fast it runs, or how slick it looks, or how unsophisticated its recommendations are—just get something running. There are several sound reasons for taking this approach:

- It's the quickest way to determine whether the problem you chose is a proper candidate for an expert system, and whether you chose a subproblem small enough to be manageable, or whether you chose a problem too small to be significant. If your preliminary choices appear to need modification, you'll have lost little. If you're on the right track, the good performance demonstrated early will encourage everybody involved to refine and perfect the prototype.

- It's a quick way to educate your human experts. When they see how the system manipulates the knowledge they've input, they'll be much better prepared to articulate further inputs accurately.

- It's a quick way to elicit full knowledge from your human experts. Few people are able to create, but we're all great at criticising existing work. The moment your expert says "That's not the way it goes together—here's how it really works..."you'll know that your prototype has served its vital purpose.

Based on a great many actual cases, you can estimate that, from a standing start, you can produce your first demonstration expert system within six months. Here's a typical timetable:

Problem Selection: 1 to 2 months.

Tool Selection: less than 1 month.

Demonstration System: 1 to 2 months.

The time to complete and get approval for a Production System—a system fully validated by the human experts and accepted by management for routine use—is extremely variable, as you'd expect. We've seen many Production Systems completed and accepted in a few months, but a few that have taken more than a year.

STEP FIVE
Measure and disclose your results

The organization that supports you in this effort has a right to know whether the technology shows a potential for improving its operations, or whether expert systems are wrong for it. And if your managers are like most, they have a strong need for quantified results.

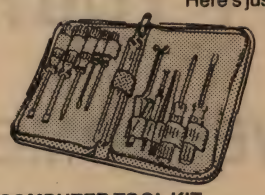
This raises a difficult challenge, because most expert systems are created to make problem-solving more effective, rather than make the operations more efficient. But anything can be measured, as long as scientific validity is not demanded. In headline terms, your measurement might take any of these forms: Trouble-shooting Expert System Reduces Downtime on Production Lines by 22%, or Diagnostic Expert System Lets Hotline Technicians Answer 8 Customer Inquiries per Hour Instead of Former 6, or Sales Reps Report Customer Acceptance of First Recommendations has Risen from 62% to 73% with Help of Expert System.

Conclusion

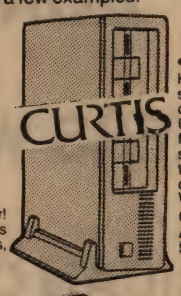
Although expert system technology has been commer-

continued on page 205

GET THE MOST OUT OF YOUR COMPUTER...
from the data supply company that offers *YOU* the most!
MAGTEK MEDIA DATA SUPPLIES, LTD.
✓ Great Products ✓ Great Service ✓ Great Prices.
Here's just a few examples.



• COMPUTER TOOL KIT
All the tools for servicing a personal computer! Includes IC insertion/extractor, 3 prong parts retriever, tweezers, 3 drivers, 4 screwdrivers, and handsome vinyl zipper case.
ONLY! $29.95

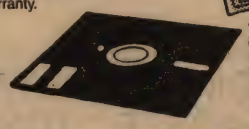


• SYSTEM STAND
Holds IBM PC or XT system unit vertically, occupying less space. Unit can be placed on floor, freeing desk top space. Vertical positioning reduces disk drive wear. Lifetime Warranty.
ONLY! $24.95
Available for AT $29.95

• LOCKABLE COMMAND CENTER
Individually switched, controls up to 5 peripherals, surge protection with EMI-RFI filtering, digital clock, master key switch, 8.5 ft. power cord, circuit breaker, static discharge. Lifetime Warranty.
WAS $159.95
JUST CUT! $60
NOW ONLY!
$99.95 Limited Quantities

• KEYBOARD EXTENSION CORD!
Extend your keyboard with this 6 ft. coiled cord for IBM PC or XT keyboard.
ONLY! $18.95

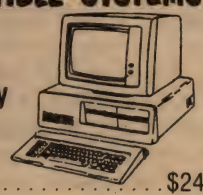
ALSO AVAILABLE:
• IBM PC color monitor extension cord 6 ft. $18.95
• Monochrome (incl. power cord) $24.95



• MAXELL FLOPPY DISCS
MD2-DM — 5¼", DS/DD floppy discs. Bulk packed in cases with Tyvek envelopes & labels.
ONLY! .99¢ each
(Minimum order 10 discs)

PLUS HUNDREDS OF OTHER GREAT COMPUTER PRODUCTS.
FOR INFORMATION ON ANY COMPUTER PRODUCT OR TO PLACE AN ORDER.
CALL TOLL-FREE! 800-221-0869
MAGTEK·MEDIA DATA SUPPLIES, LTD.
17 Church Avenue
Brooklyn, N.Y. 11218
In N.Y. State (718) 851-8383
Outside N.Y. Call Toll Free
800-221-0869
© 1986, Magtek Media, Ltd. All rights reserved.

Anniversary Sale
IBM/PC/XT/AT COMPATIBLE SYSTEMS



Unconditional guarantee
1 year replacement warranty

ROLL YOUR OWN CLONE
Instruction manual $24.00
All you ever needed to know but were afraid to ask.

MOTHERBOARDS
XT-Compatible 640K/ROM/ØK/4.77 MHz .. $129.
XT-Compatible 640K/ROM/ØK/8 MHz ..... $159.
AT-Compatible 1 Mb/ROM/ØK/8 MHz ..... $725.

INTERFACE CARDS
Multi-function I/O Floppy/Ser/Parr/CC .... $109.
Multi I/O-XT Ser/Parr/CC ..... $99.
Multi I/O-AT Ser/Parr ..... $109.
Floppy CTLR w/cable (4 Drv.) ..... $60.
Color Graphics RGB/Compos/Mono ..... $70.
Mono Graphics-HERC-Compat/PTR ..... $89.
Multi Function-AST 6 pak-Compat ..... $120.
20 Mb Hrd Disk Kits ..... $407.

OTHER STUFF
Keyboard XT/AT Compatible ..... $79.
135 Watt Power Supply ..... $79.
AT Case/Mounting Kit ..... $99.
XT Flip Top or Slide Case/Kit ..... $49.

ALL SOFTWARE — up to 40% OFF
COMPLETE COMPUTER SYSTEMS
(214) 539-8355
3413 Long Prairie Rd. Flower Mound, Tx 75028

TI Forum
continued from page 203

One of the really nice things about using Compuserve's TI Forum is that you get to fraternize with some real geniuses. The Forum (really, the TI Special Interest Group or GIS) is frequented by a large number of the real "movers-and-shakers" in the TI community. One such genius is Warren Agee. Warren lives in Lavonia, Michigan, and is, truly one of the most knowledgeable c99 programmers I have met. He has written the first commercial program written entirely in c99 (the soon-to-be-released "Article Filer" from Asgard Software, P.O. Box 10306, Rockville, MD 20850 and numerous tutorials and program source code files (available on Compuserve's Forum for downloading). He has also taught me everything I know about this language. A real programmer and teacher. He offers as an exclusive to the *Computer Shopper* TI Forum the following information. Remember, you read it here first!

Warren Agee's c99 Tips And Tricks

Compuserve ID 70277,2063

BUGS found on the c99 disk:

The following string functions, found in the file STINGFNS on the c99 2.0 disk, do not work properly. The corrections are shown in Listing 1.

Two **NEW functions:**

x = in_string(string,cnt)

A replacement for gets(). "string" is the char array that will hold the string. "cnt" is an integer that specifies the maximum length of the string to be inputted. The function returns the actual length of the string. Returns a -1 if a ctrl-z is hit. Backspace is supported, as in gets(). This function is shown in Listing 2.

The second function requires in_string and strcpy to be defined in the same program, and is called just like in_string. It is also an input routine; however, if one enters a ctrl-z, and text that was in the string prior to calling get_string remains unchanged. See Listing 3.

The functions "in_string" and "get_string" were developed by Warren and are extremely useful. Try them out. Warren is now working on the first truly relational database for the TI 99/4A and it will be written in c99. Thanks to Warren for giving the Forum this exclusive.

Fairware Does It Again!

Canada (and Ontario in particular) has really produced some incredible Fairware products. Disk Manager 1000, the c99 Compiler, and others. Well, the Canadians have done it again. RAG Software (R.A. Green, 1031 Chantenay Drive, Gloucester, Ontario, Canada K1C 2K9) has released a Macro Assembler. This package comes as 2 disks and contains extensive on-disk documentation. This package, like c99, makes assembly language more friendly. By using the macro library which comes with the package, you can accomplish several assembly language statements with one macro, thus speeding and simplifying your code. It's kinda hard to explain (there is an excellent review of the package by John Clulow in the July *MICROpendium*), but it's almost as easy as c99 and just as fast. Another major programming tool for the TI. Check it out.

Gary Cox, one of the driving forces behind one of the top TI users groups in the country, the Mid-South Users Group (P.O. Box 38522, Germantown, TN 38183; you can subscribe to their terrific newsletter for $10/year) also offers some unique Fairware for the usual disk and prestamped, self-addressed mailer. Weather Forecaster, the only program of its kind for the TI, does just what the title suggests and with graphics. He also has a BASIC database. Try and send $'s if you use them. Thanks for sharing Gary. ●

Expert Systems
continued from page 204

cially available for only a few year, the technology has proven its reliability and effectiveness in field use. A few applications have been abandoned, but most have become proven successes. Costs are no longer a barrier, many excellent hardware and software products are readily available, and many companies offer experienced assistance.

The risks are small, the rewards are great, the time is now.

Viewpoints

Question: What educational and professional backgrounds are good foundations for careers in knowledge engineering?

Bill Turpin, manager of AI applications for TI's Data Systems Group:

"A technical background is very helpful because a knowledge engineer is really a modern version of a systems analyst. So, computer skills are essential, problem solving skills are essential—and yet, many people trained in those disciplines lack some of the interpersonal and social skills that are also necessary. Therefore, I wouldn't say that you would have to have one of those technical degrees. It might be that a person in the area of geology or art would have enough technical skills to be able to do the job and might even be better at some of the social skills and interviewing skills...maybe even a combination of journalism and computer programming."

Michael Smith, member of the group technical staff for TI's Industrial Systems Division, and knowledge engineer for the Campbell Soup expert system (See November 1985 edition of *AI Letter*):

"I was just talking to a friend of mine about that, and one thing we're noticing is that people with backgrounds in education and psychology are becoming knowledge engineers. I read a quote by Ed Feigenbaum* in *Building Expert Systems*, and he said the "knowledge engineer practices the art of bringing the principles and tools of AI research to bear on difficult applications problems requiring experts' knowledge for their solution," which would imply that the knowledge engineer has to be a computer scientist of some sort. But it seems to me that recently some people are calling knowledge engineers people who simply go out and extract knowledge and relay that knowledge to somebody who can put it into the computer."

*Edward A. Feigenbaum is a professor of computer science and a principal investigator of the Heuristic Programming Project at Stanford University. He is a co-author of *The Fifth Generation*.

From: AI Artificial Intelligence Letter, published by Texas Instruments Data System Group. ●

PRINTER REPAIR

$59.95 plus parts

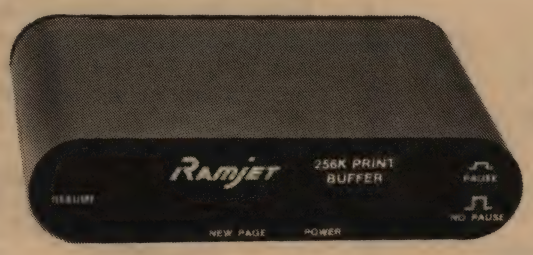
OKIDATA —	ML Series
EPSON —	MX, FX, LX, RX Series
STAR —	(All)
C-I TOH —	A10, 8510, 1550 Series
IBM —	Matrix, Proprinter

Call on Other Printers
CALL FOR RAN #

P.S.- Still doing the best disk drive repair around.

ADAHK INC.
7260 Collamer Road
East Syracuse, New York 13057
Units returned UPS—COD (315) 656-3988

RAMJET



256K Print Buffer

The RAMJET 256K Print Buffer is the right answer for the expanding personal or business computer user. A slow printer causes delay, robbing you of hours of computer productivity. With the RAMJET 256K Print Buffer, your computer is rapidly freed up from printing duties.

LARGE BUFFER SPACE

The RAMJET 256K Print Buffer provides a full 256K bytes of buffer space for print data storage. Some other print buffers only offer you 8K or 16K of buffer space, hardly enough to hold a single document. The RAMJET 256K Print Buffer can hold over 100 double spaced pages.

INEXPENSIVE

The RAMJET 256K Print Buffer is economical. Most other print buffers do not allow memory expansion, and the ones that do can cost over $800.00 to expand to 256K. The RAMJET 256K Print Buffer comes complete with a full 256K of memory at a lower price than many other smaller buffers.

FAST DATA RATE

The RAMJET 256K Print Buffer is fast. The parallel version can send and receive up to 7000 bytes per second. The serial version can send and receive up to 9600 baud. This allows your computer to be free for other uses fast.

EASY TO USE

The RAMJET 256K Print Buffer is easy to use. It comes with an easy to understand instruction manual, allowing anyone to quickly learn how to operate the unit.

CUSTOM APPLICATIONS

The RAMJET 256K Print Buffer can be custom programmed for special applications such as a remote intelligent RS232 controller. For more information, contact Paul Renton at (206) 236-2983.

ORDERING INFORMATION

The RAMJET 256K Print Buffer is available now in either parallel or serial versions at a suggested list price of only $269.00. Dealer and distributor inquires are welcome. For more information or to order the RAMJET 256K Print Buffer, see your local dealer or:

CALL (206) 236-2983

Omnitronix, Inc.
P.O. Box 43
Mercer Is., WA 98040
(206) 236-2983

The right solution to increase your computer productivity.

Design Your Own Printer Characters

by Benjamin Kaceans

If you are like me, you are always trying to find new ways to make your older equipment do things that the newer equipment does without having to spend the money to purchase these new products. In my case, this holds true for my printer as well as my computer system. Although the printer I use is the popular C.Itoh 8510 Prowriter, the procedures covered here pertain to the C.Itoh 1550, TEC 8510, TEC 1550, NSC 8023 and the Apple DMP as well.

What More Will It Do?

When I purchased my C.Itoh 8510A printer I received a manual that was printed by C.Itoh instead of the newer manual printed by Leading Edge. My manual stated that the printer was capable of excepting download characters, although there was no description of how to do this. This article will describe three ways to add custom characters, of your own design, to the character repertoire of the printer.

First, there are two types of characters that may be added, normal and proportional. The normal characters are restricted to an eight by eight dot pattern while the proportional characters are eight dots high by any number from one to two hundred and fifty-five dots wide. Since the normal characters are always eight dots wide the actual character descriptor contains eight bytes per character. When proportional characters are added, the first byte of the character descriptor contains the number of bytes needed to describe this character. Therefore, the proportional character descriptors will have varying lengths.

When the added normal characters are enabled, all mutually exclusive style attributes, such as pica, elite, compressed, bold and underline, are still useable. When the added proportional characters are enabled, style attributes such, as bold and underline, are still useable.

As stated above, there are three methods for adding characters to the printer. The first is to use the existing internal print buffer and download the new characters. The second method is to install an additional 2K print buffer internally and download a larger character set. The third method is to add, interally, a permanently installed character set using a 2K by eight bit PROM. I have found that the second method is the most useful. Without a downloaded character set this added RAM will automatically be used by the printer as an expanded print buffer. The advantage of the PROM based character generator is that the character set does not have to be downloaded each time the printer is turned on.

The following paragraphs will describe the capabilities of each of these three methods.

Capabilities

First we will examine method one. The printer is provided with a RAM area for buffering incoming ASCII codes of 934 bytes. We are allowed to use some of this RAM for downloading characters either normal or proportional or both. Since the printer still requires some of this RAM area for a buffer, the amount of RAM available for downloading is restricted to 864 total bytes. This yields 108 possible characters that may be added when normal characters are loaded. When downloading proportional characters, the actual number of characters that may be added depends on how many bytes are required to form each of these characters, plus one byte to specify the number of horizontal dots for that character. At this time, it should be noted that all character descriptors must be an even number of bytes. If you describe a character that has an even number of bytes, and then add the first byte, the total number of bytes will be odd. Since the printer will find this unsatisfactory, a pad byte of (00) should be appended to the end of your character descriptor to provide an even number of bytes. This will effect the total number of characters that will effect the total number of characters that will be allowed in 864 bytes of available RAM.

For example, suppose one half of our proportional characters are eight bytes long and the other half are nine bytes long. Adding the first byte to each yields a character descriptor of nine and ten bytes respectively. Since only even character descriptors can be used the nine byte descriptor must be adjusted to form a ten byte descriptor. Now all your characters have ten byte descriptors yielding 86 total characters that will fit. It should be understood that this pertains only to characters of the proportional character set because all the characters in the normal character set are eight bytes long and do not require a leading byte.

Now let's examine what we will obtain from the second method. When we add the 2K RAM device we have increased the downloadable area from 864 bytes to 2912 total bytes. Remember ASCII codes 20H to FFH are printable codes. This allows us access up to 224 total characters for normal and 224 total characters for proportional. Therefore, we still do not have enough RAM for a full set of each. A full set of normal characters would require 1792 bytes allowing us to put a full set of normal characters and many proportional characters in this space at the same time.

Referring back to our example described in method one, and assuming again that all our proportional characters are ten bytes long, a full set of these proportional characters would require 2240 bytes. There is enough storage using the extra 2K RAM, and some of the original RAM, to fit this full proportional character set.

A major advantage is obtained from this method. When the printer is powered up, the extra 2K or RAM is found and assigned to print buffer space automatically, without intervention from the host computer. When additional characters are added, through the download process, and some of the additional 2K RAM is not used it will be assigned as additional print buffer. This increase in print buffer size can only help speed up the printing process.

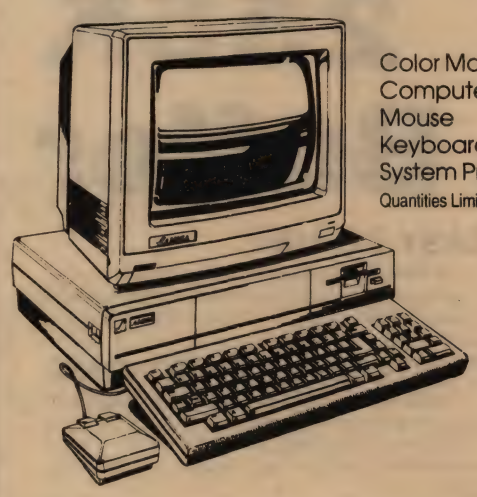
The third method should be considered when a permanent set of additional characters can be completely contained within 2048 bytes. This method eliminates any downloading operation and provides a constantly available set of additional characters. Naturally no additional print buffer will be realized from this method.

Modifying The Printer

The procedure to modify the printer, as required in method two and three, is quite easy. There is a blank socket on the main printed circuit board labeled IC16. This blank socket is intended to hold a 2K byte RAM device that is, or one that is compatible with, the 6116 Static Random Access Memory. If, in your printer, this socket is not empty then the extra 2K byte RAM is already installed. A 2716 EPROM device will also operate in this socket for the purposes of installing a permanent

continued on page 207

AMIGA™
Gives You A Creative Edge



Color Monitor
Computer with 256KB
Mouse
Keyboard
System Price: $1,195.00
Quantities Limited

Hardware	Price
256 KB Memory Expansion	$149.00
5 1/4" Disk Drive/Transformer	$249.00
3 1/2" Disk Drive DS/DD 800K	$249.00
Software	
Amiga Graphicraft	$ 49.95
Amiga Pascal	$ 99.95
Amiga Textcraft	$ 99.95
Chang Labs Rags to Riches *each accounting module*	$199.95
Microsystems Analyze	$ 99.99
Microsystems BBS-PC	$ 99.99
Microsystems ONLINE!	$ 99.00

DATACRAFT, INC.
13714 SO. NORMANDIE • GARDENA, CALIF. 90249-2696 • (213) 321-2320

Polaroid®
When you're in a spot, only Polaroid offers to get you out.
Free DataRescue™ service

3½" DISKS	5¼" DISKS	8" DISKS
S-Side 16.95	D-Side D-Den. 9.95	S-Side D-Den. 17.95
D-Side 21.95	S-Side 96tpi 13.95	D-Side D-Den. 19.95
	D-Side 96tpi 15.95	
	High Den. 22.95	

*Offer Good For Polaroid Diskettes ONLY

Old Reliable the Diskette Connection™
*Delaware 1-800-451-1849 P.O. Box 10247 Wilmington, DE 19850
*Oklahoma 1-800 654-4058 P.O. Box 1874 Bethany, OK 73008
*Nevada 1-800-621-6221 P.O. Box 1213 Boulder City, NV 89005

Design Your Own
continued from page 206

nonvolatile character set.

Describing The Characters

We will first discuss the method of describing the normal character set. As stated above all normal characters must be described within an eight by eight grid and, always contain eight bytes for each character. Suppose we wish to describe the character in Figure 1. First we draw the character in an eight by eight grid. Next we derive the numbers under each column. This is done by adding the numbers to the right of each row where a dot is located. These resulting numbers are the HEX values that fire the vertical print pins from left to right. In this example the total character descriptor is (18H,24H,42H,FFH, 42H,24H,18H,00H) and it will be downloaded to the printer left (18H) to right (00H).

Now let us see how we go about describing proportional type characters. Figure 2 contains two examples of proportional characters. The first character is eight dots wide and partially described as (18H,24H,42H,FFH,42H, 24H,18H,00H). Now we must add the first byte which is the total count of bytes needed to describe this character. When we add the first byte the total number of bytes within the descriptor is an odd number. Since this descriptor is unsatisfactory, we must add the pad byte of 00H to the end and recalculate the first byte. When this is done, we obtain the proper character descriptor shown below:
(0AH,18H,24H,42H,FFH, 42H,24H,18H,00H,00H)

The second character starts off with an odd number of bytes, but when the first byte is added, the total number of bytes is even. Therefore, this is an acceptable descriptor. The descriptor of the second character is (0AH,00H,18H,24H,42H, FFH,42H,24H,18H,00H)

Now that we know how to develop the characters, we

continued on page 208

Listings for Design Your Own Printer Characters

CONCLUSION

I hope that you will find this procedure as useful as I have for creating unique and personalized printouts. The versatility of these printers is now only limited by your imagination.

LISTING ONE

```
10   REM*** MAIN CHARACTER DOWNLOAD PROGRAM ***
20   REM*** BENJAMIN KACENAS ***
30   REM*** 1414 MOORGATE DR. KNOXVILLE, TN 37922 ***
40   DEFINT I-N
50   REM*** RESET THE PRINTER ***
60   DATA 27,92,0,0
70   FOR I=1 TO 4
80   READ J
90   GOSUB 1000
100  NEXT I
110  REM*** SET UP THE PRINT BUFFER ***
120  DATA 27,94,112,112,112,116,0,120,166,3
130  FOR I=1 TO 10
140  READ J
150  GOSUB 1000
160  NEXT I
170  REM***'DOWNLOAD THE CHARACTER DESCRIPTORS ***
180  REM*** THE DATA STATEMENTS, LISTING 2 OR 3 PLACED HERE ***
190  REM*** DATA STATEMENTS ARE LINES 200 THROUGH 510 ***
520  FOR I=1 TO 1734
530  READ J
540  GOSUB 1000
550  NEXT I
560  REM*** SET UP THE POINTERS ***
570  DATA 27,94,112,135,112,137,0,119
580  FOR I=1 TO 8
590  READ J
600  GOSUB 1000
610  NEXT I
620  END
```

LISTING TWO

Data statements for cursive character set.

```
200  DATA 27,94,120,0,126,192
210  DATA 0,0,0,0,0,0,0,0,0,0,0,79,0,0,0,0,0,0,7,0,7,0,0,0,20,
127,20,20,127,20,0,0,4,42,42,127,42,42,16,0,67,35,16,8,4,98,97,0
,48,78,73,86,32,80,72
220  DATA  0,0,0,0,4,2,1,0,0,0,0,28,34,65,0,0,0,0,0,65,34,28,0,0
,0,8,42,28,28,42,8,0,0,0,8,8,62,8,8,0,0,0,0,0,176,112,0,0,0,8,8,
8,8,8,8,0
230   DATA  0,0,0,0,96,96,0,0,0,64,32,16,8,4,2,1,0,0,62,81,73,69
,62,0,0,0,0,66,127,64,0,0,0,81,97,81,73,73,70,0,0,34,65,73,73,73
,54,0,0,24,20,18,17,127,16,0
240  DATA  0,39,69,69,69,69,57,0,0,48,72,76,74,73,48,0,0,1,97,17
,9,5,3,0,0,54,73,73,73,73,54,0,0,6,73,41,25,9,6,0,0,0,0,54,54,0,
0,0,0,0,0,182,118,0,0,0
250  DATA  0,0,8,20,34,65,0,0,0,20,20,20,20,20,20,20,0,0,0,65,34
20,8,0,0,2,1,81,9,9,6,0,0,2,113,73,121,65,62,0,60,66,65,65,65,62
,64,64,4,2,127,73,73,73,54,0
260   DATA  0,60,66,65,65,34,0,0,4,2,127,65,65,34,28,0,0,127,73,
73,73,33,0,0,0,64,66,73,41,25,15,8,87,37,85,75,68,66,63,0,4,66,1
27,8,8,8,127,0,112,64,71,89,33,95,0,0
270   DATA   0,6,105,89,73,62,8,8,0,4,2,127,24,36,66,65,112,84,8
4,62,37,69,67,0,66,63,1,1,127,1,1,127,2,1,127,1,1,1,126,0,28,34,
67,69,69,69,34,29,4,2,127,18,17,17,14,0
280   DATA  28,34,65,65,81,97,98,92,4,66,63,25,25,39,64,64,0,98,
69,73,81,33,0,0,0,2,34,65,65,63,0,0,4,2,63,64,64,64,63,64,4,2,63
,64,64,64,63,2,4,63,64,64,127,64,64,63
290  DATA  65,34,20,8,20,34,65,64,4,2,103,104,104,104,127,32,65,
97,81,73,69,67,65,32,0,0,127,65,65,0,0,0,0,1,2,4,8,16,32,64,0,0,
0,65,65,127,0,0,0,0,4,2,1,2,4,0
300  DATA   0,64,64,64,64,64,64,64,0,0,0,1,2,4,0,0,32,16,120,72,
72,56,64,64,32,32,48,79,75,120,32,32,32,16,104,72,72,64,32,32,32
,112,72,78,121,39,32,0,0,64,64,80,40,88,64,64
310 DATA  32,16,8,255,151,112,32,32,0,24,164,164,252,32,32,32,0,
32,32,127,31,8,120,0,0,64,64,32,58,64,64,0,0,32,32,208,253,32,32
,0,0,32,16,127,24,36,64,0,0,64,32,31,47,64,64,0
320 DATA  32,16,120,8,56,56,8,120,32,16,120,8,8,112,0,0,0,48,72,
72,72,72,48,32,32,32,48,252,36,52,40,32,32,16,24,36,36,252,160,3
2,0,0,120,16,8,56,0,0,64,64,32,88,92,96,64,32
330 DATA  0,64,68,36,63,68,68,0,32,16,120,64,64,120,64,32,16,56,
64,64,62,8,8,0,64,64,120,64,120,64,120,64,0,8,72,80,48,80,72,64,
0,24,32,224,248,32,32,0,0,8,72,104,88,72,64,0
340 DATA  0,0,8,54,65,65,0,0,0,0,0,0,119,0,0,0,0,0,65,65,54,8,0,
,0,0,2,1,1,2,2,1,0,0,0,0,0,0,0,0,0,128,128,128,128,128,128,128,1
28,192,192,192,192,192,192,192,192
 350  DATA  224,224,224,224,224,224,224,224,240,240,240,240,240,
240,240,240,248,248,248,248,248,248,248,248,252,252,252,252,252,
252,252,252,254,254,254,254,254,254,254,254,255,255,255,255,255,
255,255,255,255,0,0,0,0,0,0,0
 360 DATA 255,255,0,0,0,0,0,0,255,255,255,0,0,0,0,0,255,255,255,
255,0,0,0,0,255,255,255,255,255,0,0,0,255,255,255,255,255,255,0,
0,255,255,255,255,255,255,255,0,16,16,16,16,255,16,16,16
370  DATA   16,16,16,16,31,16,16,16,16,16,16,16,240,16,16,16,16,
16,16,16,255,0,0,0,0,0,0,0,255,16,16,16,1,1,1,1,1,1,1,1,16,16,16
,16,16,16,16,16,0,0,0,0,255,0,0,0
380  DATA   0,0,0,0,0,0,0,255,0,0,0,0,240,16,16,16,16,16,16,240,
0,0,0,0,0,0,0,0,31,16,16,16,16,16,16,31,0,0,0,0,0,0,0,0,192,32,1
6,16,16,16,16,32,192,0,0,0
390 DATA 0,0,0,0,7,8,16,16,16,16,16,8,7,0,0,0,0,0,0,0,0,0,0,0,0,
0,64,160,160,64,0,0,0,0,0,0,15,1,1,1,128,128,240,0,0,0,0,0,0,0,0
,32,64,128,0,0
400  DATA  0,0,0,24,24,0,0,0,0,5,5,69,37,21,15,0,0,0,4,68,52,20,
12,0,0,0,16,8,124,2,0,0,0,0,12,4,70,36,28,0,0,0,68,68,124,68,68,
0,0,0,68,36,20,126,4,0
410  DATA   0,0,4,126,4,20,12,0,0,0,64,68,68,124,64,0,0,0,84,84,
84,124,0,0,0,0,28,0,92,64,60,0,0,8,8,8,8,8,8,0,0,1,65,61,9,5,3,0
```

Listing continued on page 209

Design Your Own
continued from page 207

should discuss the four steps needed to allow us to get these into the printer and use them. The four steps covered in the following paragraphs are: 1) setting the print buffer size, 2) downloading the characters, 3) setting the printer pointers and 4) enabling and disabling the new characters.

Buffer Size

The setting up of the print buffer must always be done when methods one or two are used to add characters. This is necessary because all available RAM is automatically assigned as print buffer at power up, and we must protect the RAM necessary to hold our downloaded characters.

All download sequences whether setting buffer size, downloading character descriptors or setting memory pointers, always start with the same two bytes (1BH,5EH). These two bytes notify the printer that the following bytes are for the purpose of modifying memory.

There are two printer memory locations that must be modified to set up the new buffer. Memory location 7070H contains the last print buffer address + 1. Memory location 7072H contains the total count of the bytes remaining for use as the print buffer. Normally, without the extra RAM installed, memory location 7070H contains the address 7800H because the last available print buffer location is 7FFFH. Memory location 7072H contains the count 03A6H which is our 934 bytes of print buffer. Without modification the normal printer buffer extends from memory location 745AH to 77FFH inclusive.

Now let us figure out how we would specify the print buffer if we were going to set aside enough memory space to accommodate the previous examples. Remembering that one normal character requires eight bytes and each of our proportional characters requires ten bytes, the total required memory would appear to be 28 bytes. Unfortunately, this is not the case because for each proportional character we will add, we must provide two bytes as a pointer to the first byte in each character descriptor. Since we are adding two proportional characters we need a total memory area of 32 bytes. To complete this operation for method one we need to load memory location 7072H with the reduced buffer count (934-32 = 902) or (3A6H-20H = 0386H). Also, memory location 7070H must be loaded with the last useable print buffer address + 1(77FFH-20H + 1 = 77E0H). Now we must provide this information in a proper sequence that the printer will understand. As previously stated, all loading sequences must start with (1BH,5EH). Now we specify the address that must be modified. This is accomplished by specifying the starting address of the download then the ending address + 2. Since we are loading ony two contiguous addresses, 7070H and 7072H, the next four bytes will be (70H,70H,70H,74H). Finally, we send the actual four bytes that modify these two locations. We must send the new last available print buffer address + 1 and the new buffer byte count with the least significant byte first and the most significant byte last. To complete our example, the total download sequence would be as shown below:

```
(1BH,5EH,                          Start download sequence.
 70H,70H,                          First address of download.
 70H,74H,                          Last address of download + 2.
 E0H,77H,                          Last avail buffer location + 1 LSB,MSB.
 86H,03H)                          Recalculated buffer length LSB,MSB.
```

We will now go through the same procedure again but this time we will assume the printer has had the extra 2K buffer installed. The last available buffer address is now 7FFFH, so our new calculation of the buffer ending address + 1 is (7FFFH-20H + 1 = 7FE0H). The calculated remaining buffer size will be (934 + 2048-32 = 2950) or (03A6H + 0800H-20H = 0686H). Now, for this example, the buffer size download sequence will be as shown below:

```
(1BH,5EH,                          Start download sequence.
 70H,70H,                          First address to download.
 70H,74H,                          Last address to download + 2.
 E0H,7FH,                          Last avail buffer location + 1 LSB,MSB.
 86H,06H)                          Recalculated buffer length LSB,MSB.
```

Two more points should be made clear before we leave this discussion of setting up the print buffer. Since all buffer area used for print buffer must be contiguous, always use the upper most RAM available for your additional characters. We should also note that when setting up the buffer this operation should only be performed just after power is applied or when the printer has been reset. If you do not wish to sequence power to the printer before you set up the buffer the following download sequence may be used to reset the printer, (1BH,5DH,00H,00H).

Loading The Characters

Now we are ready to download the character descriptors. This is accomplished in the same manner we used to set up the print buffer. We start with the two byte download sequence, followed by the start address of the download, then the ending address of the download + 2. The remaining bytes of the download sequence are the character descriptors.

In this example, we will describe how to download the three characters we have previously developed. The normal character will be sent to the printer first, then the two starting addresses of the proportional characters, and last the two proportional character descriptors. Assuming method one, the download sequence would be as shown at top of page.

```
(1BH,5EH,                          Start download sequence.
 77H,E0H,                          Start address of download.
 78H,00H,                          Last address of download + 2.
 18H,24H,42H,FFH,42H,24H,18H,00H,
                                   Normal character descriptor.
 ECH,77H,                          Starting address of second proportional character
                                   LSB,MSB.
 F6H,77H,                          Starting address of second proportional character
                                   LSB,MSB.
 0AH,18H,24H,42H,FFH,42H,24H,18H,00H,00H,
                                   First proportional character descriptor.
 0AH,))H,18H,24H,42H,FFH,42H,24H,18H,00H)
                                   Second proportional character descriptor.
```

Assuming method two, the download sequence would be as shown below:

```
(1BH,5EH,                          Start download sequence.
 7FH,F0H,                          Start address of download.
 80H,00H,                          Last address of download + 2.
 18H,24H,42H,FFH,42H,24H,18H,00H,
                                   Normal character descriptor.
 ECH,7FH,                          Starting address of first proportional character.
                                   LSB.MSB.
 F6H,7FH,                          Starting address of second proportional character.
                                   LSB.MSB.
 0AH,18H,24H,42H,FFH,42H,24H,18H,00H,00H,
                                   First proportional character descriptor.
 0AH,00H,18H,24H,42H,FFH,42H,24H,18H,00H)
                                   Second proportional character descriptor.
```

Now that we have placed the character descriptors in the printer memory we have only one more operation before we can use them. We must now tell the printer where these character descriptors are loaded.

Setting The Memory Pointers

There are two memory pointers that must be loaded. Address 7085H is the pointer location which must contain the address of the first byte of the proportional character set. Address 7087H is the pointer location which must contain the address of the first byte of the normal character set. Going back to our example of our three characters, and method one, the first location of the proportional character set is 77E8H, and the first location of the normal character set is 77E0H. We must now subtract 40H from from the proportional character set pointer, and 100H from the normal character set pointer, yielding 77A8H and 76E0H respectively. Now the total pointer download sequence is as shown below:

```
(1BH,5EH,                          Download start sequence.
 70H,85H,                          First address of download.
 70H,89H,                          Last address of download + 2.
 A8H,77H,                          Address of first byte of proportional set -40H.
 E0H,76H)                          Address of first byte of normal set -100H.
```

Using the same example, but with method two, the pointer download sequence will be shown as below:

```
(1BH,5EH,                          Download start sequence.
 70H,85H,                          First address of download.
 70H,89H,                          Last address of download + 2.
 A8H,7FH,                          Address of first byte of proportional set -40H.
 E0H,7EH)                          Address of first byte of normal set -100H.
```

The pointer download sequence is the only operation that is necessary if character addition using method three is chosen.

Now To Use Them

Now that we have reset the printer, set buffer, downloaded the character descriptors and modified the pointers, we

continued on page 215

LOW PRICE LEADER

CANNON F60 PRINTER	$129	XT SYSTEM	$495
300/1200 MODEM	$99	TURBO XT SYSTEM	$595
20 MB SEGATE/w controller	$389	XT SYSTEM-20 MB	$895
DS/DD DISKS	47¢	PORTABLE SYSTEM	$895

SYSTEMS INCLUDE: Case, 135WPS, 1 Floppy, Keyboard
FREE-Word Processor-Spreadsheet-Database

COMPONENTS

XT Motherboard	$99	300/1200 External	$99
Turbo Motherboard	$119	300/1200 Internal	$119
Metal Case	$39	Intel Above Board	$279
Turbo Case	$69	Rampage	$249
135W Supply	$59	WD Hard Controller	$100
5150 Keyboard	$49	Adeptec RLL Controller	$199
5151 Keyboard	$75	Floppy Controller	$39
20MB ½H/Controller	$399	Multifunction Card	$89
360K ½H/Controller	$129	Color Card	$59
20MB ½H Segate	$299	Monochrome Card	$89
360K Floppy	$79	EGA Card	$249
20MB Hard Card	$449	Speed PAC286	$449
Portable Case	$499	Hayes 1200B	$329

SOFTWARE

Microsoft Word	$249	LOTUS 1-2-3	$299
Wordstar	$249	Symphony	$329
Framework II	$389	Q & A	$199
DBASE III+	$389	Turbo Lightning	$59
Public Domain	$3	Watson	$339

PRINTERS MONITORS

EPSON LX80	$209	Green Monitor	$69
EPSON FX85	$329	Monochrome Monitor	$89
EPSON FX286	$479	Color Composite	$199
Okidata 192	$319	HX 12 RGB	$399
Okidata 193	$459	HX12E RGB	$479
STAR NX-10	$219	NEC Multisync	$519

CHIPS

8087 5Mhz	$109	64K Dynamic-set of 9	$10
8087 8Mhz	$149	256K Dynamic-set of 9	$30
80287 6Mhz	$169	V20 NEC	$13
80287 8Mhz	$269	V30 NEC	$14

★ 1-800-225-0105 ★ 1-512-836-3766

COMPUTER MART of AUSTIN, TEXAS
9415 Burnet Rd. #110 Zip 78758 Customer Service, Purchasing 512-836-3767

CALL FOR ITEMS NOT LISTED
WE BUY AND SELL IN VOLUME

Design Your Own Listings
continued from page 207

```
,0,32,16,8,124,2,1,0
420 DATA 0,14,66,66,35,18,14,0,0,0,66,66,126,66,66,0,0,34,18,
10,127,2,2,0,0,66,34,31,66,34,30,0,0,0,18,18,127,18,18,0,0,4,66,
33,17,9,7,0,0,4,3,66,34,30,2,0
430 DATA 0,0,66,66,66,66,126,0,0,2,15,66,34,31,2,0,0,74,74,
74,32,16,12,0,0,66,34,18,26,38,66,0,0,2,63,66,74,70,66,0,0,6,8,6
4,32,16,14,0,0,4,66,37,25,9,7,0
440 DATA 0,72,74,42,30,9,8,0,0,0,7,64,39,16,15,0,0,4,69,37,
29,5,4,0,0,0,127,4,8,16,0,0,0,0,68,36,31,4,4,0,0,64,65,65,65,65,
64,0,0,0,74,42,18,42,70,0
450 DATA 0,0,34,18,123,14,18,0,0,0,64,32,16,15,0,0,0,120,0,2,
4,8,112,0,0,63,68,68,68,68,68,0,0,2,2,66,34,18,14,0,0,4,2,1,2,4,
120,0,0,32,26,2,127,2,10,48
460 DATA 0,2,18,34,82,10,6,0,0,0,66,74,74,74,66,0,0,112,72,68,
66,81,96,0,0,64,32,20,8,20,3,0,0,4,5,63,69,68,4,0,0,2,2,127,2,10
, 6,0,0,64,66,66,126,64,64,0
470 DATA 0,74,74,74,74,74,126,0,0,4,5,69,37,21,12,0,0,0,15,0,
64,32,31,0,0,64,63,0,127,64,32,24,0,0,127,64,32,16,8,0,0,126,66,
66,66,66,126,0,0,7,1,65,33,17,15,0
480 DATA 0,66,66,64,32,16,12,0,0,0,1,2,1,2,0,0,0,0,2,5,5,2,0,0,
36,36,36,36,36,36,36,36,0,0,0,0,255,36,36,36,36,36,36,36,255,36,
36,36,36,36,36,36,255,0,0,0
490 DATA 128,192,224,240,248,252,254,255,255,254,252,248,240,
224,192,128,1,3,7,15,31,63,127,255,255,127,63,31,15,7,3,1,0,24,9
2,126,127,126,92,24,0,14,31,63,92,63,31,14,0,8,28,62,127,62,28,8
500 DATA 0,28,92,79,127,79,92,28,0,60,126,126,126,126,60,0,
0,60,66,66,66,66,60,0,128,64,32,16,8,4,2,1,1,2,4,8,16,32,64,128,
129,66,36,24,24,36,66,129,16,0,16,0,16,0,16,0
510 DATA 0,0,0,0,85,0,0,0,16,16,16,16,21,16,16,16,16,16,16,
16,80,16,16,16,16,0,16,0,255,0,0,0,0,0,0,0,255,0,16,0,16,0,16,0,
85,0,16,0
```

LISTING THREE

Data statements for italics character set.

```
200 DATA 27,94,120,0,126,192
210 DATA 0,0,0,0,0,0,0,0,0,0,0,79,0,0,0,0,0,0,7,0,7,0,0,0,20,
127,20,20,127,20,0,0,4,42,42,127,42,42,16,0,67,35,16,8,4,98,97,0
,48,78,73,86,32,80,72
220 DATA 0,0,0,0,4,2,1,0,0,0,0,28,34,65,0,0,0,0,0,65,34,28,0,
0,0,8,42,28,28,42,8,0,0,0,8,8,62,8,8,0,0,0,0,0,176,112,0,0,0,8,8
,8,8,8,8,0
230 DATA 0,0,0,0,96,96,0,0,0,64,32,16,8,4,2,1,112,108,82,73,
73,37,27,7,64,64,98,90,71,0,0,0,0,64,102,81,73,69,2,0,0,64,72,73
,73,61,3,1,0,16,24,116,26,23,16,0
240 DATA 32,64,78,73,73,49,1,0,48,72,76,74,73,40,24,0,0,96,17,
9,5,3,1,0,32,88,78,73,73,73,57,6,0,70,73,73,41,25,6,0,0,0,0,54,5
4,0,0,0,0,0,0,182,118,0,0,0
250 DATA 0,0,8,20,34,65,0,0,0,20,20,20,20,20,20,20,0,0,0,65,
34,20,8,0,0,2,1,81,9,9,6,0,0,2,113,73,121,65,62,0,96,24,20,18,17
,81,50,12,64,49,77,75,73,73,57,6
260 DATA 48,76,66,65,65,65,33,3,64,49,77,67,65,33,25,6,96,88,
78,73,73,73,1,1,96,24,14,9,9,9,1,1,48,76,66,65,73,41,27,8,96,24,
14,9,72,56,12,3,64,64,97,89,71,1,1,0
270 DATA 48,64,64,65,49,13,3,1,96,24,14,9,20,100,2,1,0,96,88,
70,65,64,64,0,96,28,3,4,8,100,30,3,96,28,3,4,24,96,28,3,48,76,66
,65,65,33,25,6,96,24,14,9,9,9,9,6
280 DATA 48,76,66,65,81,33,89,6,96,24,14,25,41,73,73,6,32,70,
73,73,73,73,49,2,0,1,97,25,7,1,1,1,48,76,67,64,64,48,12,3,0,24,3
8,65,32,24,6,1,96,92,35,24,16,96,28,3
290 DATA 64,33,22,8,52,66,1,0,0,67,36,24,8,4,2,1,64,97,81,73,
69,67,1,0,0,0,127,65,65,0,0,0,0,1,2,4,8,16,32,64,0,0,0,65,65,127
,0,0,0,0,4,2,1,2,4,0
300 DATA 0,64,64,64,64,64,64,64,0,0,0,1,2,4,0,0,0,32,80,84,84,
52,88,0,0,96,92,71,68,68,52,8,0,48,72,68,68,68,8,0,0,120,68,68,1
00,28,3,0,0,48,88,84,84,84,8,0
310 DATA 0,8,104,28,11,9,1,0,128,176,168,164,164,100,24,0,0,96,
24,7,4,100,24,0,0,64,64,96,92,65,0,0,0,128,128,128,96,28,1,0,0,9
6,28,19,40,68,0,0,0,64,64,96,93,67,0,0
320 DATA 96,24,4,100,28,4,100,28,0,96,24,4,4,4,100,28,0,48,72,
68,68,68,36,24,0,192,56,36,36,36,36,24,0,24,36,36,36,228,60,4,0,
96,28,8,4,4,4,0,0,64,72,84,84,36,4,0
330 DATA 0,4,36,92,71,68,4,0,0,32,92,64,64,32,92,0,0,28,32,64,
32,16,12,0,0,96,92,32,16,32,96,28,0,68,40,16,40,68,4,0,0,0,76,48
,16,8,4,0,0,64,100,84,84,76,4,0
340 DATA 0,0,8,54,65,65,0,0,0,0,0,0,119,0,0,0,0,0,64,64,54,8,
0,0,0,2,1,1,2,2,1,0,0,0,0,0,0,0,0,0,128,128,128,128,128,128,128,
128,192,192,192,192,192,192,192,192
350 DATA 224,224,224,224,224,224,224,224,240,240,240,240,240,
240,240,240,248,248,248,248,248,248,248,248,252,252,252,252,252,
252,252,252,254,254,254,254,254,254,254,254,255,255,255,255,255,
255,255,255,255,0,0,0,0,0,0,0
360 DATA 255,255,0,0,0,0,0,0,255,255,255,0,0,0,0,0,255,255,255,
255,0,0,0,0,255,255,255,255,255,0,0,0,255,255,255,255,255,255,0,
0,255,255,255,255,255,255,255,0,16,16,16,16,255,16,16,16
370 DATA 16,16,16,16,31,16,16,16,16,16,16,16,240,16,16,16,16,
16,16,16,255,0,0,0,0,0,0,0,255,16,16,16,1,1,1,1,1,1,1,16,16,16
,16,16,16,16,16,0,0,0,0,255,0,0,0
380 DATA 0,0,0,0,0,0,0,255,0,0,0,0,240,16,16,16,16,16,16,240,
0,0,0,0,0,0,0,0,31,16,16,16,16,16,16,31,0,0,0,0,0,0,0,0,192,32,1
6,16,16,16,16,32,192,0,0,0
390 DATA 0,0,0,0,7,8,16,16,16,16,16,8,7,0,0,0,0,0,0,0,0,0,0,
0,0,64,160,160,64,0,0,0,0,0,0,15,1,1,1,128,128,240,0,0,0,0,0,0
,0,32,64,128,0,0
400 DATA 0,0,0,24,24,0,0,0,0,5,5,69,37,21,15,0,0,0,4,68,52,20,
12,0,0,0,16,8,124,2,0,0,0,0,12,4,70,36,28,0,0,0,68,68,124,68,68,
0,0,0,68,36,20,126,4,0
410 DATA 0,0,4,126,4,20,12,0,0,0,64,68,68,124,64,0,0,0,84,84,
84,124,0,0,0,0,28,0,92,64,60,0,0,8,8,8,8,8,8,0,0,1,65,61,9,5,3,0
,0,32,16,8,124,2,1,0
420 DATA 0,14,66,66,35,18,14,0,0,0,66,66,126,66,66,0,0,34,18,
10,127,2,2,0,0,66,34,31,66,34,30,0,0,0,18,18,127,18,18,0,0,4,66,
33,17,9,7,0,0,4,3,66,34,30,2,0
430 DATA 0,0,66,66,66,66,126,0,0,2,15,66,34,31,2,0,0,74,74,74,
32,16,12,0,0,66,34,18,26,38,66,0,0,2,63,66,74,70,66,0,0,6,8,64,3
2,16,14,0,0,4,66,37,25,9,7,0
440 DATA 0,72,74,42,30,9,8,0,0,0,7,64,39,16,15,0,0,4,69,37,
29,5,4,0,0,0,127,4,8,16,0,0,0,0,68,36,31,4,4,0,0,64,65,65,65,65,
64,0,0,0,74,42,18,42,70,0
450 DATA 0,0,34,18,123,14,18,0,0,0,64,32,16,15,0,0,0,120,0,2,
4,8,112,0,0,63,68,68,68,68,68,0,0,2,2,66,34,18,14,0,0,4,2,1,2,4,
120,0,0,32,26,2,127,2,10,48
460 DATA 0,2,18,34,82,10,6,0,0,0,66,74,74,74,66,0,0,112,72,
68,66,81,96,0,0,64,32,20,8,20,3,0,0,4,5,63,69,68,4,0,0,2,2,127,2
,10,6,0,0,64,66,66,126,64,64,0
470 DATA 0,74,74,74,74,74,126,0,0,4,5,69,37,21,12,0,0,0,15,0,
64,32,31,0,0,64,63,0,127,64,32,24,0,0,127,64,32,16,8,0,0,126,66,
66,66,66,126,0,0,7,1,65,33,17,15,0
480 DATA 0,66,66,64,32,16,12,0,0,0,1,2,1,2,0,0,0,0,2,5,5,2,0,
0,36,36,36,36,36,36,36,36,0,0,0,0,255,36,36,36,36,36,36,36,255,3
6,36,36,36,36,36,36,255,0,0,0
490 DATA 128,192,224,240,248,252,254,255,255,254,252,248,240,
224,192,128,1,3,7,15,31,63,127,255,255,127,63,31,15,7,3,1,0,24,9
2,126,127,126,92,24,0,14,31,63,126,63,31,14,0,8,28,62,127,62,28,
8
500 DATA 0,28,92,79,127,79,92,28,0,60,126,126,126,126,60,0,0,
60,66,66,66,66,60,0,128,64,32,16,8,4,2,1,1,2,4,8,16,32,64,128,12
9,66,36,24,24,36,66,129,16,0,16,0,16,0,16,0
510 DATA 0,0,0,0,85,0,0,0,16,16,16,16,21,16,16,16,16,16,16,16,
80,16,16,16,16,0,16,0,255,0,0,0,0,0,0,0,255,0,16,0,16,0,16,0,85,
0,16,0
```

TYMON

```
5000 DATA "            1                  "
5010 DATA "           1                   "
5020 DATA "      1  11  1 1 11            "
5030 DATA "    1                   1      "
5040 DATA "   1                     1     "
5050 DATA " 1                        1    "
5060 DATA "                            1   "
5070 DATA "1                            1  "
5080 DATA " 1      1       1         1  "
5090 DATA " 1                          1  "
5100 DATA "1            1               1 "
5110 DATA "             1                 "
5120 DATA "  1         111          1    "
5130 DATA "  1                      1    "
5140 DATA "  1                      1    "
5150 DATA "      1            1          "
5160 DATA "       1          1           "
5170 DATA "    1   11111111       1      "
5180 DATA "    1                  1      "
5190 DATA "     1                1       "
5200 DATA "      11111111111111          "
```

TYMON

```
0490          // allows use of graphics in DATA statements
0500          //
0510          IF line'string$(1:1)="e" THEN
line'string$(1:1):="1"
0520          //
0530          // a dump of intermediate values for analysis
0540          //
0550          // converts leading character to numeric value
0560          //
0570          intermediate1:=VAL(line'string$(1:1))
0580          intermediate2:=2ther'bit
0590          intermediate3:=intermediate1*intermediate2
0600
sprt'ary(line,element):=sprt'ary(line,element)+intermediate3
0610          intermediate4:=sprt'ary(line,element)
0620          intermediate5:=(element-1)*8
0630          intermediate6:=element'bit+intermediate5
0640          intermediate7:=24-intermediate6
0650          //
0660          // assigns to line'string$ the characters at
right
0670          //
0680          line'string$:=line'string$(2:intermediate7+1)
0690          PRINT AT 1,39: " "
0700        ENDFOR element'bit
0710      ENDFOR element
0720    ENDFOR line
0730  ENDPROC capture
0740  //
0750  PROC outgo
0760    //
0770    PAGE
0780    INPUT "input ds to print to screen, lp to print
hardcopy ": where$
0790    //
0800    PAGE
0810    SELECT OUTPUT where$+":"
0820    FOR line:=1 TO 21 DO
0830      FOR element:=1 TO 3 DO
0840        IF where$="lp" THEN PRINT
TAB(10*element);sprt'ary(line,element);
0850        IF where$="ds" THEN
0860          PRINT AT line,15*(element-1):
sprt'ary(line,element)
0870        ENDIF
0880      ENDFOR element
0890      PRINT
0900    ENDFOR line
0910    pause
0920    SELECT OUTPUT "ds:"
0930    PAGE
0940    //
0950  ENDPROC outgo
```

TYMON

```
0010 // delete "0:sprtmel.com"
0020 // save "0:sprtmel.com"
0030 //
0040 initialize
0050 capture
0060 outgo
0070 disk'save
0080 END
0090 //
0100 PROC initialize
0110   PAGE
0120   PRINT "A SPRITE DEVELOPMENT ROUTINE"
0130   PRINT
0140   pause
0150   //
0160   // convert 0/1 strings to sprite values
0170   //
0180   // sprt'ary() - dimensional matrix which will hold the
sprite numbers
0190   //
0200   // line'string$ is character string of current data
statement
0210   //
0220   DIM sprt'ary(21,3), line'string$ OF 24
0230   PAGE
0240   //
0250 ENDPROC initialize
0260 //
0270 PROC capture
0280   PAGE
0290   PRINT "as element is read, number is printed, upper
right"
0300   PRINT
0310   pause
0320   pause
0330   PAGE
0340   FOR line:=1 TO 21 DO
0350     READ line'string$
0360
0370     FOR element:=1 TO 3 DO
0380       // print element being read
0390       PRINT AT 1,37: 3*(line-1)+element
0400       sprt'ary(line,element):=0
0410       FOR element'bit:=1 TO 8 DO
0420         other'bit:=8-element'bit
0430         // next two statements apply only if blanks or
graphics occur in DATA
0440         //
0450         // allows use of spaces in DATA statements
0460         //
0470         IF line'string$(1:1)=" " THEN
line'string$(1:1):="0"
0480         //
```

TYMON

```
0960 //
0970 PROC disk'save
0980   INPUT "input disk to save values to diskette, else
input no ": keep'it$
0990   IF keep'it$(1:1)="d" THEN
1000     outdisk(sprt'ary(,))
1010   ELSE
1020     NULL
1030   ENDIF
1040 ENDPROC disk'save
1050 //
1060 PROC outdisk(sprt'ary(,))
1070   PAGE
1080   INPUT "input file name ": keep'file$
1090   OPEN FILE 5,"0:"+keep'file$,WRITE
1100   WRITE FILE 5: sprt'ary(,)
1110   CLOSE FILE 5
1120 ENDPROC outdisk
1130 //
1140 PROC pause
1150   FOR q:=1 TO 1000 DO
1160     NULL
1170   ENDFOR q
1180 ENDPROC pause
1190 //
1200 artist'canvas:
1210 //
1220 //    000000000111111111122222
1230 //    123456789012345678901234
1240 //
1250 DATA "          111111          "
1260 DATA "        1111 11111        "
1270 DATA "       111111 11111       "
1280 DATA "    11111      11111      "
1290 DATA "    111          111      "
1300 DATA "    11            11      "
1310 DATA "    11            11      "
1320 DATA "    11   1    1   11      "
1330 DATA "    11            11      "
1340 DATA "    11     11     11      "
1350 DATA "    11            11      "
1360 DATA "    11            11      "
1370 DATA "    11   111111   11      "
1380 DATA "11  11   1    1   11  11"
1390 DATA "11  11   1    1   11  11"
1400 DATA "11  11    1111    11  11"
1410 DATA "111111            111111"
1420 DATA "11111 1          1 11111"
1430 DATA " 111   1        1   111 "
1440 DATA "  11    1      1     11 "
1450 DATA "           11           "
```

TYMON

```
0010 // delete "0:readmly.com"
0020 // save "0:readmly.com"
0030 //
0040 initialize
0050 FOR images:=1 TO image'count DO
0060   read'it
0070   photos:=images
0080 ENDFOR images
0090 show'off
0100 END
0110 //
0120 PROC initialize
0130   // use of sprite figure
0140   //
0150   DIM image'catch$ OF 64, ab(21,3)
0160   DIM image1$ OF 64, image2$ OF 64, image3$ OF 64,
image4$ OF 64
0170   DIM image5$ OF 64
0180   PAGE
0190   INPUT "input number of images - up to 5 ": image'count
0200   PAGE
0210 ENDPROC initialize
0220 //
0230 PROC read'it
0240   PAGE
0250   INPUT "input source file name ": source$
0260   OPEN FILE 5,source$,READ
0270   image'catch$:=""
0280   i:=0
0290   //
0300 yank'it:
0310   //
0320   REPEAT
0330     i:=i+1
0340     j:=0
0350     REPEAT
0360       j:=j+1
0370       READ FILE 5: ab(i,j)
0380       s:=ab(i,j)
0390       b$:=CHR$(s)
0400       k:=(i-1)*3+j
0410       PRINT s
0420       image'catch$(k):=b$
0430       PRINT image'catch$(k)
```

continued on page 212

The Comal Corner
continued from page 186

and capture for posterity—and for later use in this article—his smiling visage.

In our program the activity is under your control, as you specify whether to save or temporarily retain the generated numbers. To use the numbers without retention you may wish to merge portions of the later program into this one. Then you can run that portion of the program with the array produced by the earlier portion. Of course, you'll need to modify the programs slightly for compatibility. We didn't combine the programs, as we felt the complexity was excessive.

In the above program we have used four procedures to carry out the majority of the work involved. These are initialize, capture, outgo, and disk'save. The titles tend to be self-explanatory. Capture holds the algorithm for converting the DATA statement values to sprite-generating form.

When you generate the output file name, remember it. You'll be using it in subsequent programs. By the way, when you replace the DATA statements containing Melody's picture with those containing mine, please call the resulting file, big'daddy (He sure is, especially around the middle!)

I wonder what the going price is for ungrateful daughters?

She Flies Through The Air

We have provided a rendition of Melody in the previous program, and must admit that it is slightly different than the original version. This is to provide a better image (oh, come now!) on the screen. How does she get to the screen? Thought you'd never ask!

In our next routine we take the file generated above, the one containing numeric values, and change them to a form which is sprite-compatible. Actually, the routine does a great deal more. However, we'll address its functions in sequence, so that the activity is easier to understand.

As in our previous program we've divided the activities into procedures which tend to each perform a complete action. As starters we have the old initialization routine. Then, for the number of images we wish to read in (up to 5) we perform read'it. Finally, to demonstrate how well we've done all these good things we perform show'off.

So look at the program, and then we'll examine how it does its thing. By the way, thrill of thrills, the program called

continued on page 212

MICROTECH PERIPHERALS, INC.

Part of the worldwide Microtech International Group with affiliate and branch offices in:
CONNECTICUT TEXAS CALIFORNIA TOKYO HONG KONG KOREA

IBM® AT COMPATIBLE

"MAX" BY MICROTECH

THE ULTIMATE COMPATIBLE COMPUTER
Fully IBM PC/XT/AT COMPATIBLE *all in one*
More Powerful than the IBM AT
ONE YEAR WARRANTY

- **TURBO SYSTEM expandable to 2.5meg**
- **SEAGATE HD w/ADAPTEC CARD = 30meg**
- **TEAC/CHINON 360K & 1.2meg FLOPPY**
- **NEC Multisync w/EPIC EGA CARD**

The Microtech Difference
Quality Name Brands + FCC/UL Approved

NOW EVEN MORE FOR LESS **$3680.00**
suggested list 4750.00

IBM® is a registered trademark of International Business Machines Corporation

NEW PRODUCT

INCREASE YOUR DRIVE CAPACITY 50% WITH SOFTWARE

20meg Seagate w/card, cable
+ Software = 30MEG **$490.00**
w/o card & cable **$400.00**
30meg Seagate w/card, cable
+ Software = 45MEG **$595.00**

Upgrade your existing hard disk 50% with the Microtech Software Upgrade Kit
Retail $175 ..... Introductory special $105.00

DISK DRIVES

FLOPPY DISKS 5.25" Half Height

TEAC 55BV 360K (new version)	$90.00
CHINON 502L 360K	85.00
CHINON 506 1.2meg	115.00
TANDON TM65-2 360K	94.00

HARD DRIVES

★SEAGATE ST225 SPECIAL★
20meg w/WD card & cable $395

SEAGATE	ST225 20meg half height	$300.00
	ST238 30meg w/card & cable	500.00
	ST4026 20meg w/linear voice coil	540.00
	ST4038 30meg w/linear voice coil	630.00
	ST4051 40meg w/linear voice coil	720.00
TANDON	TM262 20meg half height	300.00
NEC	D5126 20meg half height	310.00
NEC 5146	40meg half height	520.00

★NEC 5146 SPECIAL★
40meg w/DTC card & cable $605

TAPE BACK UP

Phoenix Pyramid 60meg internal	$630.00
external	690.00

CARDS & BOARDS

HARD DISK CONTROLLER CARDS

WESTERN DIGITAL #FO19	$95.00
DTC #5150CX	105.00
SMC #4002 PC	92.00
ADAPTEC #2070 *Increases HD storage 50%*	175.00
Controllers for TANDY Computers	CALL

EGA COLOR GRAPHICS CARD
the EPIC Graphics Adapter by NSI
100% IBM EGA, CGA, MDA Compatible
256K Video Ram, 136 Unique Colors
640x350 High-Res Display
USA MADE, FCC APPROVED, 2 YR WARRANTY
w/documentation & software
List Price $499 ..... SPECIAL $269.00

EXPANSION CARDS ..... CALL
MULTIFUNCTION CARDS ..... CALL

FREE UPS GROUND SHIPPING
24 HR SERVICE W/COMPUSERVE

Microtech offers Free Shipping on all UPS Ground Service anywhere in Continental U.S. Air Service available - call for charges. 24 hour service through COMPUSERVE, EASYPLEX or EMAIL. Place your order or request information via your computer.
Microtech I.D.# 76606, 3725

NEC MONITOR SPECIAL

FOR SPECIAL GRAPHICS & CAD APPLICATIONS

14" RGB
High-Res 800/560
Dot Pitch .31mm
CGA, EGA, PGA Compatible

"The Intelligent Monitor"
NEC MULTISYNC
W/EGA GRAPHICS CARD USA MADE
$849.00
w/o CARD $618.00

NEC #JB1280DA 12" Green TTL	$110.00
NEC #JB1285DA 12" Amber TTL	110.00
NEC #JC1216DFA 12" RGB High-Res Color w/monitor cable	325.00

UNINTERRUPTIBLE POWER SUPPLY ★NEW★

MICROTECH INTRODUCES THE TRUE UPS FOR YOUR PERSONAL COMPUTER
Absolutely NO Switchover Time
ULTRA COMPACT, SLIM-LINE CASE
Made to fit on top of your personal computer
DIMENSIONS: 17¼" x 15¾" x 3"

A MUST FOR YOUR BUSINESS

The UP350 will protect you from serious data losses or hardware damage due to power failure or input voltage variations during operation.

Featuring: 500W Output Capacity
Extended Battery Life
Overload LED
Adjustable-Volume Alarm
Key Switch
ONE YEAR WARRANTY

Suggested List $800 **$675.00**

ORDERS ONLY **1-800-325-1895**

CORPORATE & USER GROUP DISCOUNTS
Call for quantity pricing

IN CONNECTICUT 203-488-8993

TERMS

- Immediate delivery on COD Cash/Certified or Prepayment with Money Order.
- Personal checks take two weeks to clear.
- Minimum order $50.
- Connecticut residents add 7.5% sales tax.
- Availability and price subject to change without notice.
- Returns require authorization and may be subject to 15% restocking charge.
- All products carry manufacturers warranty.

MICROTECH PERIPHERALS, INC.
29 Business Park Drive/Branford, CT USA 06405
Dealer inquiries call Microtech International 1-800-626-4276

The Comal Corner continued from page 210

big'daddy, if you named it properly, contains a real treasure—my picture! (The old man gets worse as he ages—please humor him!)

There she goes again! Pure jealousy!

OK, now we'll look in more detail at the routines used. To start with, the procedure initialize is kind of plain vanilla. We dimension the string holders and provide for specifying how many renditions we will read in. For convenience we limited it to 5. At your discretion you can expand or cut back on the number. If you expand, however, you must provide for the additional DIM statements, and for subsequent use in the other routines.

Read'it is the workhorse for this program. We cycle through it the number of times specified in the initialize sequence. At each such pass we specify the file which is the source of our numeric values, If, for example, you call Melody's picture file Mona'Lisa (and I wouldn't) then you would read in from the source file, Mona'Lisa. And, to use the file with my handsome portrait, just enter big'daddy.

Yank'it, within the little subprogram performs the function of converting the numeric values from numeric to character form. The process consists of extracting each of the numeric elements, and using CHR$() to make the conversion. Thus for the 21 line, 24 column original drawing we now have a representation which the sprite routines can recognize. This representation is identified as image'catch$.

We can't use image'catch$ directly, as we erase the previous version when we read in another picture. So we have another procedure called substitute. It does essentially that, substitutes image1$ for the first drawing, image2$ for the second, and so on. With the completion of the last cycle through read'it we have captured all the files we intend to use.

We now are approaching the big test. Do the captured images in fact portray what we have previously generated in the DATA statements? (If it doesn't, we are definitely in trouble!) The procedure show'off will demonstrate to us that indeed they correspond. First we bring the USE statements into play to support our actions.

Then we perform another initialization routine, designated init. Here the graphicscreen is activated, images 2 through 5 are each assigned an appropriate string, colors are established, and sprite 1 is identified with the first drawing. We also locate the sprite on the screen, increase the size both in height and width, and finally show it. And sure enough, there it is. (Eh, isn't it?)

There are several ways to move a sprite around the screen. We have chosen to do so using the joystick. We plugged it into port 2 (if you chose port 1, merely change the joystick reference). The joystick circuitry can sense 8 different positions of the joystick, each 45 degrees apart. In the little routine hitailit we have set up the statements to add an increment of 1 to either the x or y coordinate to cause the sprite to be re-positioned based on the joystick value. Thus, if we want to move to the upper right we add 1 to both the current x and current y locations. Downward and to the left would require subtracting 1 from each of the two values. And so on for other joystick directions.

To allow selection of the desired image we've folded in a procedure, change'image, which replaces the current image with the next in sequence. The fire control button on the joystick is used to toggle this action. When the count exceedes the number of values read in the routine causes it to start over again with the least count.

The process of moving the image around the screen, and of selecting alternate images, continues unendingly until a key on the keyboard is pressed. The program ends when such an entry is made.

Well, that is it. No pokes, peeks, or mumbo-jumbo. Just good old COMAL language instructions and Melody goes flying into space. If you read in big'daddy also, and hit the fire button, you've undoubtedly had the thrill of watching me perform acrobatics on the screen. How much can you take in one session!

Summary

We've demonstrated how to generate, transfer to sprite form, and move the sprite under joystick control. The programs are convenient to use, and we recommend you save them for future use and expansion in later columns. Although we used only one sprite, it is evident that several could have been similarly generated by modest changes in the routines. And changing images for a single sprite, as you've seen, is easy. Best of all, the processes never involve the difficult steps associated with other languages. COMAL, if not the most user-friendly language in the world, has yet to find a challenger.

Coming Attractions

What next for COMAL? Music, Sound-effects, concurrent music and traveling sprites—all simply generated by ordinary COMAL statements. We may even get Melody to do a promenade and do si do in time to the serenade. Join us for the big hoe-down. And please let us know what you want to see in the Comal Corner. ●

Listings continued from page 210

```
0440     UNTIL j=3
0450   UNTIL EOF(5)
0460   //
0470   CLOSE FILE 5
0480   //
0490   PRINT "all done"
0500   image'catch$(64):=CHR$(TRUE)
0510   //
0520   substitute
```

TYMON

```
0530 ENDPROC read'it
0540 //
0550 PROC show'off
0560   // using a sprite in comal
0570   //
0580   // comal'sprite is save-name
0590   //
0600   USE graphics
0610   USE sprites
0620   USE joysticks
0630   init
0640   hitailit
0650 ENDPROC show'off
0660 PROC init
0670   graphicscreen(0)
0680   border(3)
0690   background(3)
0700   image'kount:=1
0710   define(1,image1$)
0720   IF photos>1 THEN define(2,image2$)
0730   IF photos>2 THEN define(3,image3$)
0740   IF photos>3 THEN define(4,image4$)
0750   IF photos>4 THEN define(5,image5$)
0760   spritecolor(1,2)
0770   identify(1,1)
0780   spritesize(1,TRUE,TRUE)
0790   spritepos(1,50,50)
0800   showsprite(1)
0810 ENDPROC init
0820 //
0830 PROC hitailit
0840   //
0850   REPEAT
0860     joystick(2,whereto,image'change)
0870     CASE whereto OF
0880     WHEN 1
0890       spritepos(1,spritex(1),spritey(1)+1)
0900     WHEN 2
0910       spritepos(1,spritex(1)+1,spritey(1)+1)
0920     WHEN 3
0930       spritepos(1,spritex(1)+1,spritey(1))
0940     WHEN 4
0950       spritepos(1,spritex(1)+1,spritey(1)-1)
0960     WHEN 5
0970       spritepos(1,spritex(1),spritey(1)-1)
0980     WHEN 6
0990       spritepos(1,spritex(1)-1,spritey(1)-1)
1000     WHEN 7
1010       spritepos(1,spritex(1)-1,spritey(1))
1020     WHEN 8
1030       spritepos(1,spritex(1)-1,spritey(1)+1)
1040     OTHERWISE
1050       NULL
```

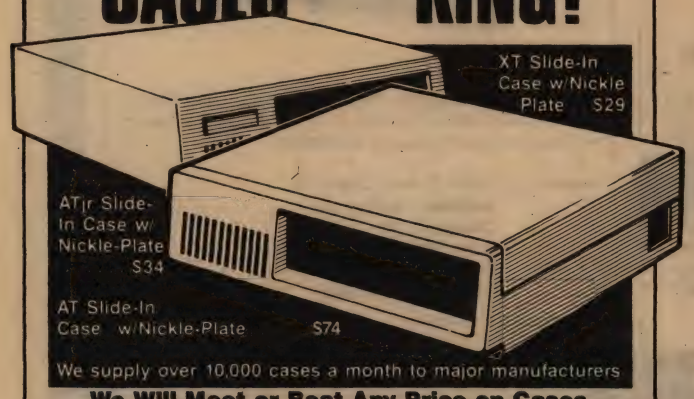
TYMON

```
1060     ENDCASE
1070     IF image'change THEN change'image
1080     IF image'change THEN image'change:=FALSE
1090   UNTIL KEY$<>CHR$(0)
1100 ENDPROC hitailit
1110 //
1120 PROC substitute
1130   FOR cycles:=1 TO 64 DO
1140     IF images=1 THEN
1160       image1$(cycles):=image'catch$(cycles)
1170     ELIF images=2 THEN
1180       image2$(cycles):=image'catch$(cycles)
1190     ELIF images=3 THEN
1200       image3$(cycles):=image'catch$(cycles)
1210     ELIF images=4 THEN
1220       image4$(cycles):=image'catch$(cycles)
1230     ELIF images=5 THEN
1240       image5$(cycles):=image'catch$(cycles)
1250     ENDIF
1260   ENDFOR cycles
1270 ENDPROC substitute
1280 PROC change'image
1290   image'kount:=image'kount+1
1300   IF image'kount>image'count THEN image'kount:=1
1310   identify(1,image'kount)
1320 ENDPROC change'image
```


ONLY $249!

ADEUS CP2000 ELECTRONIC DAISY WHEEL PRINTER

CASES from the KING!



We Will Meet or Beat Any Price on Cases.
Dealer Inquiries Welcome.

Monochrome Graphic Printer Card	$62
Floppy Disk Drive Controller	$27
Color Graphic Card w/Printer Port	$55
Multifunction Card	$72
Disk I/O	$72
640K Mother Board (4.77 MHz)	$89
Turbo Mother Board	$110
IBM Compatible Bare-Bones System	$295

RIGID MERCHANDISE CORPORATION
8531 Florence Ave., Suite 202
Downey, California 90240
(213) 862-5185
OUTSIDE CALIFORNIA
1 (800) 843-9134

WHMT: Enhanced Write-Hand-Man for the H/Z-89

by George M. Ewing

One of the reasons a good many hobbyists and other computer users initially give for changing from a CP/M system to an MS-DOS system is that the CP/M computer's limit of 64K of memory is too small to allow memory-resident programs like Sidekick, (TM) to reside in the system and still allow useful amounts of memory for other applications. These programs, sometimes called by the generic term "pop-ups," are a great convenience. Once loaded and enabled, they lie there in memory, invisible, until you need them. When you are in the middle of another program, such as an editing session with a word processor or working with a spreadsheet or specialized database, you can call them up with a single trigger character, use the utilities such as a calculator, file viewing window, etc. and then return to your original program, undisturbed.

In 1985, Alan Bomberger of Poor Person Software, Inc. completed Write Hand Man, (TM) a pop-up that could do the same kinds of things as Borland's Sidekick Program, but that would run on a CP/M system, but would take no more than 3K of memory space at any given time. This program has been very successful, and has already been widely reviewed. Now Ross Towbin and Lee Hart at Technical Micro Systems, Inc. have released an enhanced, licensed version of Write-Hand-Man, called WHMT for short, which is specially tailored to take advantage of the capabilities of the Heath/Zenith H-19 Terminal Logic Unit (TLU). This runs under CP/M on computers like the H/Z-89, on machines like the H-8, and other, non-Heath/Zenith, CP/M computers using an H-19 terminal. It will also work with other terminals that emulate the H-19, though differences in keyboard layout and so forth may impose some limitations.

The TMSI enhancements are in four areas: 1. They have added a screen-restore function that does a better job of clearing the graphics and text left from your pop-up session and restoring you to your primary program than the original Write-Hand-Man did, 2. They have added features which take advantage of the H-19 character graphics; the phonebook display now looks more like a conventional Rolodex file, the calculator display is more realistic, etc. 3. They have added features to the pop-up utilities themselves, most noteably a character string search-and-find feature to the file viewing window that greatly enhances its usefulness, and, 4. They have provided more information on customizing the program and writing your own applications.

The enhancements do come at a price; they add 2k or 3k to the memory space required, depending on how you have the system and your applications configured. Since a great many users will probably want to use a pop-up from inside a word processing program, this will reduce the available memory by the equivalent of one or two pages of text. Most users should find it a small price to pay for the added convenience.

TMSI sells several different packages of the software, ranging from the cheapest at about $39.95, which includes only the regular stock version of Write-Hand-Man without enhancements, to more complex packages that include the enhanced version instead, or both versions. They even include those versions which contain a great deal of additional help for programmers who want to write their own special applications. Some even supply source code for the enhanced applications, though not for Write-Hand-Man itself. Source for the original driver program has to be purchased from Poor Person Software. The version I am reviewing here is the 5/11/86 release, which includes both the original. Write-Hand-Man and the latest TMSI WHMT enhancements in a package deal for just under $50.

This software is not copy-protected, and there was no

continued on page 222

Zenith 151 PC
continued from page 99

friend and I was on my way to check out my monitor and cable on his vanilla model IBM PC. With a growing suspicion that I had just blown $500 on a boondoggle I hooked up my monitor to his computer. A perfect image sprang up as soon as the computer was switched on. Well, now what? My trusty Zenith 151 was not as IBM compatible as I had thought.

The Solution

Amdek was easier to get hold of than Zenith. They verified what I had guessed. The vertical sync signal from the 151 is not compatible with the 722's requirement. They volunteered to change the monitor to conform to the Zenith specs or, they said, Zenith could tell me how to alter the video board. I decided that, since it was really a Zenith incompatibility problem, I would change the Zenith board. Also, I was afraid that if I changed the monitor now I might find later that it was no longer compatible with other computers.

After calling Zenith three times and finally writing to them I received a reply. The problem is that the vertical sync signal from the Zenith is too wide for the Amdek and PGS monitors. It must be reduced from 1019 microseconds to about 190 microseconds. They provided a schematic and instructions for using existing gates on the 309 (or 309A) video board to narrow the signal. The hitch is that you must cut traces and use gates that are already being used for other functions. They also warn that this fix may interfere with proper operation of some monitors and should only be done if the scan problem exists. They provided a standard disclaimer stating that they did not "encourage or support" this modification and would not be liable for damages. Were these merely scare tactics, a way to cover their rear ends, or was

continued on page 222

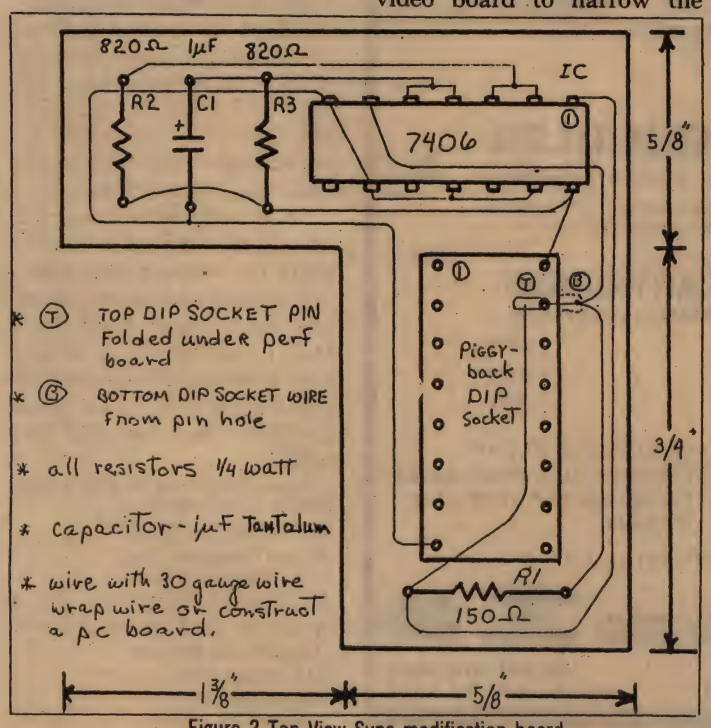


Figure 2 Top View Sync modification board

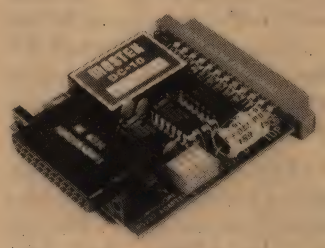
Bridging The Gap
continued from page 100

computers in the same box, sharing a keyboard and a monitor. A C-128 wouldn't be any more use than a regular C-64 on the Commodore side of the transfer, and the CP/M side of the C-128 couldn't read the H-89's hard-sector disks.

Writing several disk transfer services that advertised in the computer magazines wasn't very encouraging. They tended to answer with questions like, "How many thousand copies of the software do you need?... After only the first 10 thousand disks, we have a special deal on custom labels and packaging." and "Do you want that in AT high density format?" Even small companies that were set up for short runs were far from ideal; many still had a minimum order in the $75-100 range, more than we were willing to spend; also, many of them couldn't read the Heath hard-sector disks. A Heath HUG group had plenty of members who could still read H-17 disks, though the newer IBM and Zenith soft-sector formats were taking over fast, but none of them had easy access to a Commodore C-64, or much interest in one; processor chauvinism lives!

Our choices seemed to boil down to a serial link back-to-back transfer. I considered building up a C-64 RS-232 adapter like the ones in the ham magazines and *Computer Shopper*. The 1488 and 1499 quad receiver and line driver chips were cheap enough, but by the time you purchased perfboard, sockets, connectors, and spare chips, the cost would begin to add up. Also, I was away from home; I had almost no test equipment, and time was limited. Several dealers and fairly knowledgeable club members all recommended the DC-10 (the Mostek hybrid interface chip, not the airplane). The Jameco RS-232 interface, JE 232CM ($39.95) for the C-64 was advertised in several magazines. It used the DC-10 chip, supported all the standard DB-25 data and handshake lines, and came assembled and tested with a 6 month guarantee for under forty bucks.

While picking user's and dealer's brains, we also got some strange advice; one dealer warned us that you HAD to buy a modem to transfer files, and that if you tried to use a straight cable or null modem, the C-64's power



Jameco Interface Card

supply would catch fire, and the disk drive would overheat and blow up! Despite this and other well-meant but flaky advice, the favorable consensus on the DC-10 chip was widespread among the more knowledgeable dealers and users, and has proved to be valid. My H-89, the other end of the transfer, had the standard Heath 3-port serial card with both DTE and DCE RS-232 ports. We ordered the Jameco interface for the Commodore, and started looking for modem and file communications software.

For this, I was determined to hold out for something that could handle the Christiensen or "X-Modem" protocol. I knew these were widely available in the CP/M world, but was less sure about the Commodore universe, though it seemed likely; there were surely lots of C-64 and even VIC-20 users out there who would want to use some of the same bulletin boards and on-line services that the CP/M users did. It took some hunting, but we finally got a public domain generic X-modem communications program for the C-64 from a local user. It was supposed to handle all the X-Modem programs up through version 730, and included latches to translate back and forth between "real" ASCII and the non-standard "CBM-ASCII" used by the C-64. (The only real difference seemed to be that the upper and lower case character sets were inverted, and most of the C-64 word processing software we looked at could translate one to the other, at least when driving a printer. Still, we wanted to keep things as simple as possible.)

The Jameco interface card arrived, and was eagerly unpacked. Operations appeared very straightforward, at least so far as the hardware itself was concerned; You simply plugged the card into the user port, component side up, and with the power off. There were four switches which allowed the four most commonly used handshake lines to run either straight or inverted. The card comes up as a standard DCE port, so I connected it to the Heath 3-port board's DTE (modem) port with straight-through cable conductors on pins 2, 3, and 7, the two data lines and signal ground. I did not use any of the handshake lines, depending on the ACK and NACK protocol to keep things as simple as possible.

The interface hardware worked perfectly, straight off. With the two machines set in terminal mode, messages could be typed back and forth over the link, either with or without local echo on the CRT. Despite the fact that we had defied the one dealer's warning, hadn't bought modems, and were using a standard 3-wire straight cable, nothing caught fire or exploded. There was just a slight fuzziness on the C-64 system's color composite monitor, caused by RFI leaking out of my early model, unshielded H-89. However, there WAS a glitch in the software that made it impossible to transfer a complete CP/M file. At first, I thought it might be because I was unsure whether the C-64 software should treat the incoming CP/M data string as a -Program or -REL file, but even after that was resolved, the C-64 modem program did not receive the start-of-header (SOH) character it expected, and I ignored the rest of the file as garbage.

This was exacerbated by the fact that we were both inexperienced with the C-64 and BASIC, and we were using public domain communications software without any documentation. Undoubtably,
continued on page 216

EDP Computer

ELECTRONIC DATA PRODUCTS
2021 W. Commonwealth Av. #A, Fullerton, CA 92633
TEL: (714) 992-1157 M-F 9:00AM-5:00PM

BASIC-286 $1355 (FCC CLASS B)

- 80286-2 8 MHZ Microprocessor
- 6/8 MHZ Switchable
- Hardware Reset Button
- 640 K RAM, expandable to 1 M on mother board
- Calendar/Clock with Backup Battery on mother board
- 1.2 MB Disk Drive
- 195 W Power Supply
- AT type Keyboard
- Western Digital Floppy and Hard Disk Drive controller
- Socket for 80287 match Co-processor
- 0/1 Wait State selectable by jumper
- Runs all major software for IBM
- 1 Serial port, 1 Parallel port
- MS-DOS Manual included

EGA-286 : add **$720** to have EGA card and EGA color monitor
MONO-286: add **$180** to have Hercules compatible display card and hi-res amber monitor
COLOR-286: add **$330** to have Color Graphic Card and color monitor

OPTIONS

• 360 KB DSDD TEAC Drive	$110
• Seagate ST-225 20 MB Hard Disk Drive	$310
• MINI-IO (Serial Port, Printer Port and Game)	$85
• EGA Card (combined EGA, CGA, MDA and Printer Port)	$255
• EGA+ Card (combined EGA, CGA, MDA, HGA)	$320
XT-TURBO (FCC CLASS B) Call for details	$895

SEAGATE DISK DRIVES
(for AT, with rails, installation and format manual, format software)

• 20 MB (ST-225, 69 msec)	$310
• 20 MB (ST-4026, 40 msec)	$529
• 30 MB (ST-4038, 40 msec)	$629
• 40 MB (ST-4051, 40 msec)	$CALL
(for XT, with Western Digital Controller, formatting software, 83 pages installation manual)	
• 20 MB (ST-225 With WDC)	$399

HAYES COMPATIBLE MODEM

• 300/1200 Baud Internal Modem	$145
• 300/1200 Baud External Modem and RS-232 Cable	$159

TAPE BACKUP SYSTEM

• EVEREX-EXCELL 60 MB Internal Streaming Tape Drive	$875
(Controller and Menu driven software to perform image backup, file by file restore)	
• IRWIN 10 MB internal	$380
• IRWIN 20 MB internal	$495

MOUSE

• PC MOUSE (serial)	$125
• Logitech (serial)	$85

MONITOR

• TTL High-Resolution Amber	$95
• RGB Color Monitor	$265
• EGA Monitors	$CALL

* IBM & AT are registered trademarks of International Business Machines Corp.
** Pay extra for shipping and handling.

NEW PRICES

NEC *Starlet*™
3½" FLOPPY DRIVE

STARLET is a registered trademark of NEC

NOW **$295**
- 300K, CP/M Format
- Complete NEC8431A Emulation
- Compact: 2.2" x 4.1" x 6.4"
- Includes AC Adapter for Drive and Starlet

MEMORY MODULES
8K MODULE FOR TANDY MODEL 100, NEC 8201A AND M-10 — QTY 3 at $18 ea
THOUSANDS SOLD, EASY INSTALLATION, GUARANTEED
BEST ADVERTISED PRICE AND HIGHEST QUALITY
24K MODULE FOR MODEL 200 — $59

DATAPAC® CARTRIDGES
WITH 1 YEAR, USER REPLACEABLE BACKUP BATTERY

256K (STARLET ONLY)	$329
128K (STARLET ONLY)	$169
32K (NEC 8201 ONLY)	$ 79

NODE POLICY:
- 30 day money-back guarantee
- 12 month warranty
- Quantity discounts start at 3
- Free UPS 2ND DAY AIR (Continental US) Hawaii add $3
- Foreign add $9 drive/$4 other products

PAYMENT: VISA OR MASTERCARD, Checks held 21 days, C.O.D. add $2, California residents add 6% tax.

NODE COMPUTER SYSTEMS — VISA — MasterCard
CALL (916) 265-4668
408 BROAD STREET
NEVADA CITY, CA 95959

Z-138 & 148
continued from page 100

enhancing older computer systems, turning terminals into high-powered computers to use standard 8-bit CP/M and 16-bit MS-DOS software packages on a very sophisticated level.

I suspect that in the not too distant future, Ampro's SCSI/PLUS may become an industry standard. It is already being considered for inclusion by the ANSC committee of hard disk drive and controller manufacturers who are responsible for the ultimate definition of the X3T9.2 SCSI specifications.

NCR, who helped to develop to SCSI standard as a superset of the original SASI interface created by Shugart Associates, and whose 5380 Hard Disk Controller IC is widely used as an interface, is now including the SCSI/PLUS specifications in their technical data books.

Sources Mentioned In This Article
Zenith Data Systems
Benton Harbor, MI 49022

Ampro Computers, Inc.
67 East Evelyn Avenue
Mt. View, CA 94041

Wordcraft 3827 Penniman Avenue
Oakland, CA 94619

KJT Manufacturing, Inc.
4505 Raliff Drive
Addison, TX 75001 •

Design Your Own
continued from page 208

are ready to use our new characters. At this time, the three new characters we have developed are not enabled, and the printer will respond to ASCII codes just as if we had done nothing. To enable the newly created normal character set, which in our case is only one character, send the printer a (1BH,27H) sequence. The new character will now respond to an ASCII (20H). To enable the newly created proportional character set, which is two characters, send the printer a (1BH,50H) sequence. The new characters will now respond to ASCII codes (20H) and (21H). To disable these characters, and allow the provided sets to be used, just send the escape sequences specified in your users manual. Sequences (1BH,24H) enable Alphanumeric characters, (1BH,26H) enable Greek characters and (1BH,23H) enable Graphic symbols.

Try These

I have provided two sample character sets that I use regularly. These are total character sets containing two hundred and sixteen characters each. Therefore these will only work using method two. Listing one is the main program for downloading these characters. Listings two and three are the character descriptors. Either one can be added to listing one for the complete download program.

Listing two is the character descriptors for a full cursive character set, and listing three is the character descriptors for a complete italics character set. Both of these character sets provide new characters to the normal mode, not the proportional mode.

Conclusion

I hope that you find this procedure as useful as I have for creating unique and personalized printouts. The versatility of these printers are now only limited by your imagination. ●

Artificial Intelligence
continued from page 189

registers. Registers can be used to store 8-, 16-, or 32-bit data words, and support a range of addressing modes needed to efficiently refer to varied data structures. These features simplify the writing of compilers and ensure optimal execution of compiled programs.

Full compatibility is provided with 16-bit software applications created for the 8086 and 80286 microprocessors, as well as new 32-bit applications developed specifically for the 80386. This means that 80386-based systems can take advantage of a huge software library, including programming languages, compilers, and popular application programs.

Most significant, any such programs can run concurrently in the 80386 multitasking framework. A multiple-execution capability—found on no other processor—enables the 80386 to simultaneously execute applications written for different operating systems. An 80386-based system could, for example, support office automation applications written for MS-DOS, engineering programs using Unix, and AI software also using Unix—all running side-by-side, visible to the user in multiple screen windows.

Intel is curently working with prominent independent software vendors to generate a complete complement of software development environments, including expert system shells and compilers, interpreters and debugging facilities for all major AI languages and dialects. The first wave of these products will become available late this year, providing application developers with everything they need to create the full range of 80386-based end-user AI products.

Intel supplies a number of other products useful in AI research and systems manufacture. Two parallel computing systems—Intel's iPSC and Apex computers—provide valuable research vehicles for exploring fundamental problems in AI system architecture and software design. The iPSC is a massively parallel machine with up to 128 processor nodes arranged in a "hypercube" architecture. Together with a *Concurrent Common Lisp* environment developed for the system by Gold Hill computers, the iPSC provides the AI community with the first commerically available concurrent processor for large-scale symbolic research. Intel's Apex system is a shared-memory multiple processor system with up to five processors. ●

THERE ARE NONE BETTER!
America's Finest...NYLON
PRINTER RIBBONS
DIRECT FROM THE MANUFACTURER
SAS
INDUSTRIES, INC.
3091 N. BAY DRIVE
NORTH BEND
OREGON 97459-5020
Phone
TOLL-FREE
800-245-4657
"Radio Shack LP VI/VIII"
FITS THE
• Panasonic KX-P1093
• Radio Shack DMP 400/420
• SCM DMP 300
• DATA PRODUCTS 480
...plus many others!
BLACK ONLY Only... $4.25 EACH
COLORS Red, Blue, Green, Brown, Purple, Yellow, Gold, Orange, Silver $5.50 EACH
©Aladdin/NYC
Add $1.00 Handling on Orders Under $10
WE CARRY INK IN 10 COLORS
Cartridges carried for Most Printers!
master charge VISA

AMEC PC/AT

512k (1.2 optional ram)
1.2 Mg. Floppy Drive
Floppy & Harddisk Controller
Monochrome Graphics Card
AT Style Keyboard & AT Style Case
with Key Lock Manual & Software.

$1539.00
1 Full year WARRANTY
(Monitor Optional)

Incredible Price on Compatible Computers!

Seagate 20 Mg. Harddisk	$445.00
Panasonic 360k	90.00
FX-286 Printer	550.00
Color Monitor (Mitsubishi)	250.00
Sangsung 12" Mono	89.00
Modem Int.	185.00
Ex.	220.00

Hundreds of Items for you to upgrade your computer.

AMEC XT TURBO

640k Ram
Multifunction I/O Card
Parallel Port, Serial, Game Port, Clock & Calendar
Floppy Drive Adt. Monochrome Graphics Card & Monitor (Green-Amber), AT Style Keyboard
150 Watt power supply, 4.77 to 8.00 Mhz.
Switchable Processor Speed
Manual & Software.

$ 920.00

VISA/MASTERCARD ACCEPTED

AMEC ADVANCED TECHNOLOGY CORP.
7262 N.W. 66th Street, Miami, Florida 33166
Phone: 1-800-433-AMEC
(305) 591-2019

Bridging The Gap
continued from page 214

a real hacker would know what arcane password the C-64 was expecting as an SOH marker, and would have had no trouble re-assembling a new version of the CP/M modem program to supply it, or simply adding a new character to the file with a screen editor before transmitting it. If you're going to do this for a serious business or publishing project, getting commercial communications software with good documentation might very well be worth it. Also, going through a modem, possibly with a local third party or Bulletin Board on the line as an intermediary MIGHT make things easier.

After much head-scratching, we opted for a different way around the problem: Since all the text files were short, under ten or twelve K, we left the C-64 in terminal mode, and opened a recording buffer. The C-64 now thought it was on line to a bulletin board or information service, and would store incoming text to be saved to disk. Then I brought up the Heath's CP/M CONFIGUR utility, told the H-89 that, never mind why, I had decided to send a number of text files to the printer, but that the printer happened to be assigned to port 330, the DTE modem port, and would look like a modem or dumb teletype at 300 baud. Then I used the CP/M TYPE command to send each file to the C-64 with a CTRL-P from the keyboard.

It was slow, but it worked fine. The version of the X-modem software that we had for the C-64 had no means of automatically saving the contents of the buffer when it was full, so each file had to be saved manually, and the buffer cleared and reset. The whole process took several hours, but most of the time was consumed by waiting for the C-64's pokey 1541 disk drive, which would have been the case no matter what. The C-64 software saved all the text as – REL files, and it did strip escape characters out of the word processing codes embedded in the text, but these would have had to have been changed anyway, either manually or with macros, so as to be compatible with both Paperback Writer and my friend's daisywheel printer, which was a different model than mine. (For example, her printer had a friction feed platen, and wouldn't support CTRL-L formfeeds, and Paperback Writer stored text underline markers as a CTRL-U toggle instead of the WordStar-compatible ESC-E and ESC-R characters I had used).

When we got around to trying it later, the reverse process worked okay as well. You could send a – REL text file from the C-64 with the Paperback Writer's ASCII printer driver program, and save it from a buffer in the H-89 with a program like MODEM 730, KERMIT, or TERM.COM. The Jameco interface has proved to be very reliable. However, for a novice user, more documentation on how it works would have been helpful. The four page pamphlet that came with it does cover the basic detail on pinout and how to set the registers. However, to a user who is used to Heathkit's idiot-proof documentation and who is not familiar with C-64 BASIC, it seemed skimpy. Even in the Commodore universe, a Cardco Centronics card, which is in the same general price range, comes with a 50-page manual. There is no information provided on the DC-10 chip, nor on how any of the other support chips or internal hardware works, which is very irritating to the technically curious.

Still, the interface works fine, and once you figure out how to initialize it and set the command and control registers, it is very versatile. It will even handle 5-bit Baudot serial teletype, very handy for ham radio users and SWL's who like to listen to wire service stations that still don't use regular ASCII. The pamphlet does suggest further reference reading for the technically oriented user. If you treat the device as a single component, just a little black box that you plug in and which does its job, the lack of internal information is really only annoying, not a serious drawback.

I also experimented with the Jameco interface, using it to drive several different serial printers. It worked fine if I used it to print stuff from a BASIC file or from the keyboard. When using it with a word processor like Paperback Writer which installs its own printer driver from a menu, I was limited by the selections available, as the new driver cleared the command and control registers before installing its own information. For example, I could, after some practice, configure the port to drive an oddball daisywheel printer that could only accept 1200 baud, 7-bit, serial words without parity. However, it was not immediately obvious how to edit the printer driver software to allow printing files. It assumed an 8-bit word at all times, and I didn't know enough about the system to get around it. As for the mysterious DC-10, all I can tell you is that it's a special-purpose hybrid package, in a black plastic case about an inch square and a quarter-inch thick. I was unable to find out much about it in any of the common IC manuals I had access to, and as Mostek is apparently undergoing re-organization or is being sold, I may never learn the secret internal details. Anyhow, the interface is versatile, and it works.

The Jameco JE232CM RS-232 Adapter at a Glance:

Product: RS-232 serial interface card for the Commodore C-64 and VIC-20 computers.

Interface Chip used: Mostek DC-10

Port mode: DCE (Data Communications Equipment)

(DB-25) Pins supported: 2,3,4,5,6,7, & 20. (no CTS on the VIC-20)

Baud Rates: User-selectable from 50 to 4,800 baud.

Protocols supported: (command and control registers) 5,6,7 & 8 data bits, 1 or 2 stop bits. parity: odd, even, mark, space, or none. Full or half duplex. Handshake: X-on/X-off or CTS. The registers may be set from BASIC, or from machine-language kernal calls. More documentation on how to do this would have been helpful.

Status Register: Provides an accumulating count of parity errors, framing errors, etc. There are special requirements for reading this register from BASIC.

Power: Plugs into and is powered by the C-64 User Port. (device #: 2)

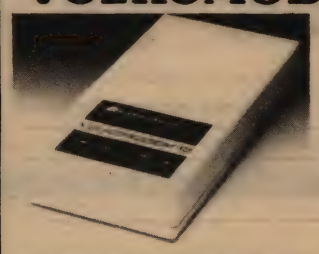
Price: $39.95

Manufacturer: Jameco Electronics, 1355 Shoreway Road, Belmont, CA 94002; (415) 592-8097. ●

MODEMS

THE LOWEST PRICES EVER!!

VOLKSMODEM 1200



300/1200 bps
auto-dial/auto-answer
Hayes compatible
Smartmodem
Requires Volkscable
Retails at $299.00.

NOW ONLY: $139.95 !!

WATSON BY NATURAL MICROSYSTEMS

Specifically designed for IBM PC, XT, and AT and compatibles. Watson is one of the most exciting new products available. Features include: digital voice processing, comprehensive telephone management, 300/1200 bps modem, electronic phone book, data base, and more!!

ALL FOR ONLY: $379.95

MULTIMODEM MT212AH2
300/1200 bps, 100% Hayes compatible smartmodem with 10 number battery backed memory. Detects dial tones and busy.
REDUCED: CALL

MULTIMODEM MT224AH
300/1200/2400 bps, asynchronous/synchronous, Hayes compatible smartmodem. 10 number battery backed memory for storing numbers. V.22 CCITT compatible.
GREAT PRICE: CALL

MULTIMODEM MT224EH
Same as modem above but features built-in error checking with MNP (MicroCom Networking Protocol).
REDUCED: CALL

TURBO 2400
INCOMM DATA SYSTEMS, INC.

Incomm's Turbo 2400 intelligent modem is a 2400/1200/600/300 bps, auto-dial/auto-answer, Bell and CCITT compatible product designed to be UPGRADABLE to 4800 and also 9600 bps. This product is fully Hayes compatible not only at 1200 but also 2400 bps. "Help" screen options built in.

LOW PRICE $349.95

VOLKSi

300/1200 bps, internal half-card for IBM PC, XT, and AT and compatibles. 100% Hayes compatible. Comes with "Access" software!
JUST: $139.95!!

PASSWORD
300/1200 bps, Hayes compatible smartmodem with RS232 cable.
ONLY $199.95

COURIER
300/1200/2400 bps, asynchronous smartmodem, utilizes Hayes command set, auto speed fallback and V.22 bis CCITT compatible
ONLY $399.95

VOLKS MINI
1200 bps, manual dial with auto or manual answer capabilities. Non-Hayes compatible. Modem measures only 3.4 by 6 inches and comes with RS232 cable. Small modem,
SMALL PRICE: $139.95

SIGNALMAN EXPRESS
300/1200 bps, asynchronous, 100% Hayes smartmodem, plus dial tone/busy detect and battery backed telephone number/comment directory.
LOW PRICE: $225.95

WE WILL MATCH ANY PRICE

CALL NOW TOLL FREE: 1-800-922-2329
TECHNICAL SUPPORT: (316)264-5589 IN KANSAS: (316)264-5589

OMNI DATA COMMUNICATIONS
440 MAPLE * WICHITA, KS. * 67213

TERMS: C.O.D. acceptable add $1.90. Personal checks require two weeks for clearance. All prices reflect a 3% cash discount. Add 3% for MC, Visa and Purchase Orders. Add 3% for shipping and handling. No refunds after 30 days. Kansas residents add 5% sales tax. All orders returned or refused are subject to a 15% restocking fee. Prices subject to change without notice.

A NEW DIMENSION IN COMPUTER EDUCATION

*"**PC TechVideo** provides an in-depth overview of the installation of computer components. We use it to train all our technicians and assemblers."*

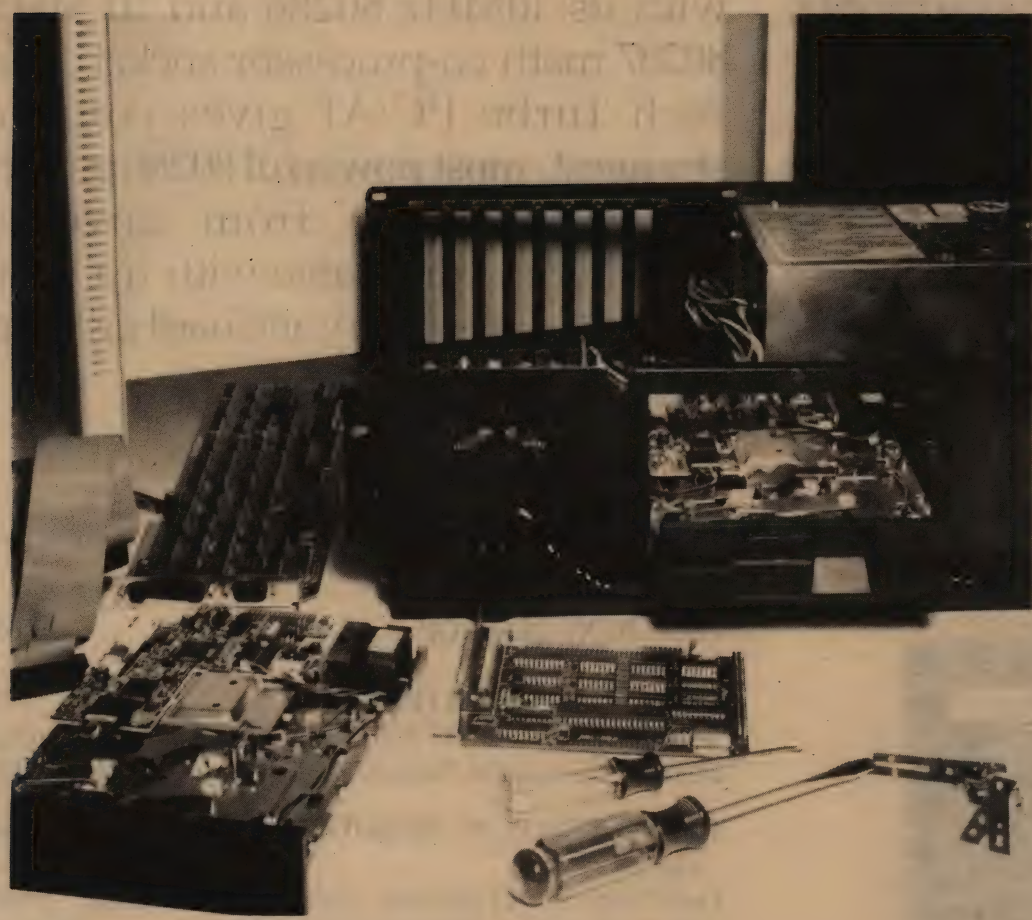
John Atma, Chief Technician for Tech Personal Computers

*"After viewing **PC TechVideo**, I now understand the basics of how my computer works and was even able to replace the 1.2M drive on my AT at work. **PC TechVideo** was definitely worth the money."*

Brenda Hudson, Data entry and processor for Sark Enterprises

*"**PC TechVideo** is great. With the help of PC TechVideo, I was able to install a 10MB hard disk on my XT without taking it to an expensive service center."*

Gita Beant, Economics major at UC Irvine



PC STAR PRODUCTIONS

1040 EAST CHAPMAN AVE.
ORANGE, CALIFORNIA 92666

OUTSIDE CALIFORNIA IN CONTINENTAL U.S. - PUERTO RICO, HAWAII EXCLUDING ALASKA:

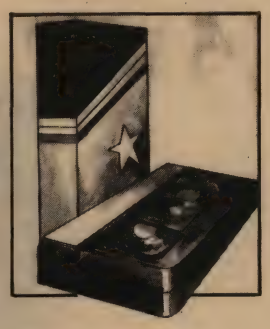
1-800-438-8877

CALIFORNIA RESIDENTS CALL:

(714) 771-3560

SPECIAL INTRODUCTORY OFFER

$89.95



PC TechVideo is an innovative set of two 2-hour instructional video tapes which form a complete guide to the IBM® and compatible personal computer systems. Designed for everyone, from the complete novice to the software expert. PC TechVideo provides the viewer invaluable first hand instruction in the installation and maintenance for IBM® and compatible systems.

Part I of PC TechVideo is a complete and comprehensive presentation of prominent features of the PC family including:

- Motherboard architecture
- Memory Configuration and Addressing
- Monitor Technology
- Floppy and Fixed Disk Technology
- Bus Architecture
- Serial and Parallel Ports

Part II of PC TechVideo shows the details involved in actually installing, configuring, and replacing:

- Motherboards
- Power Supplies
- Floppy and Fixed Disks
- Drive Controllers
- Popular Expansion Boards

PC TechVideo provides instruction not found in books or magazines. It is an essential tool for anyone interested in understanding their PC. You can't afford not to have PC TechVideo.

ORDER NOW

NAME _____

ADDRESS _____

_____

CITY _____ STATE _____ ZIP _____

PHONE # _____

PLEASE RUSH _____ COPIES OF PC TECHVIDEO IN

☐ **VHS** ☐ **BETA FORMAT**

☐ VISA ☐ MASTERCARD ☐ C.O.D.

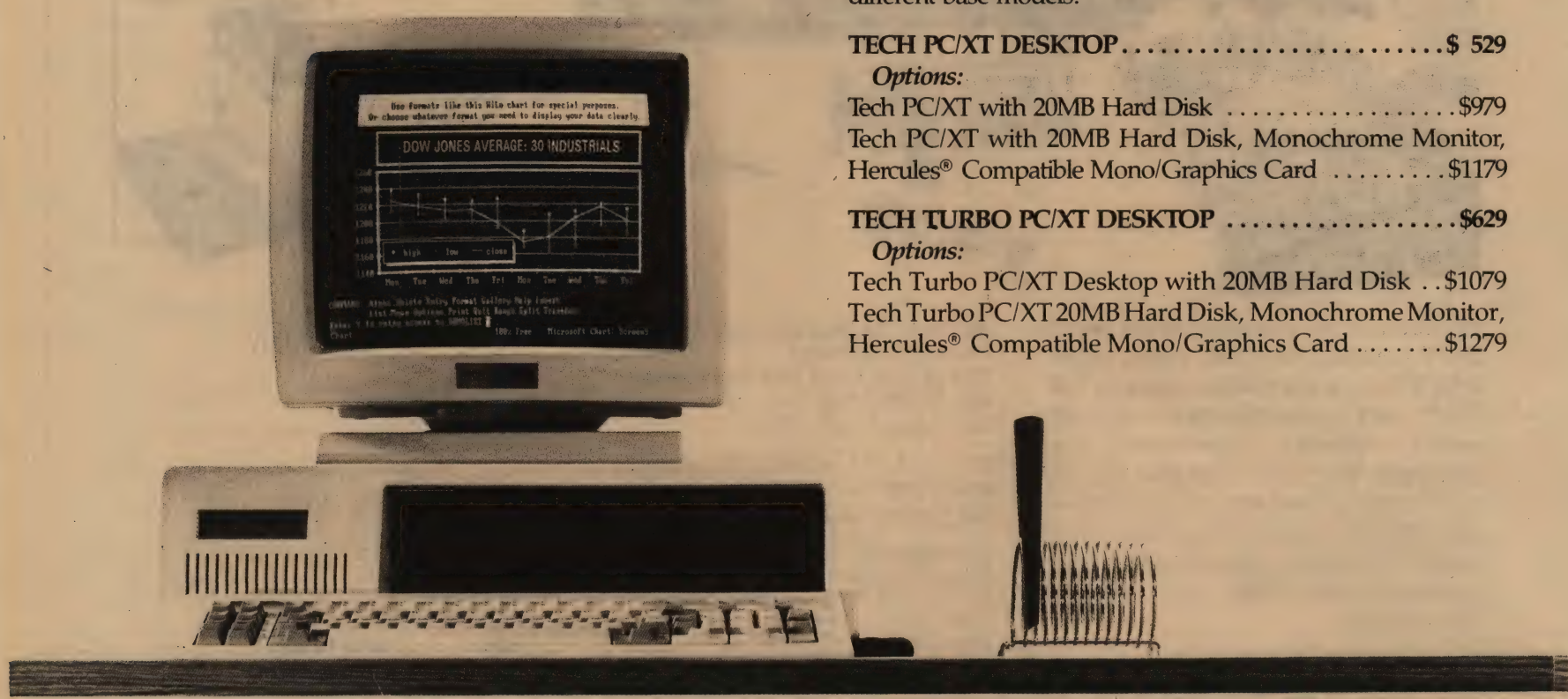
☐ CHECK/MONEY ORDER ENCLOSED

ADD $3.50 SHIPPING.

CALIFORNIA RESIDENTS ADD 6% SALES TAX.

STATE OF THE

Tech PC Desktop Computers are designed for survival. The XT's leave your desktop looking comfortably empty with their slim non-obtrusive profile; The AT's give you a powerful presence with a clean lined sturdy chassis. Combined with a 14 inch, 800 by 400 line amber monochrome monitor or a 14 inch, 1280 by 800 black and white monochrome monitor you've got **State of the Art** staring straight back at you. If 8 MHz 80286 power isn't fast enough for you... try the Tech Turbo PC/AT with its 10MHz 80286 and 10 MHz 80287 math co-processor socket. The Tech Turbo PC/AT gives you the **strongest, most powerful** 80286 performance available from anyone, anywhere... available with up to 16 megabytes of memory and hard disks up



TECH PC DESKTOP COMPUTERS are available now in 4 different base models:

TECH PC/XT DESKTOP ..... $ 529

Options:

Tech PC/XT with 20MB Hard Disk $979

Tech PC/XT with 20MB Hard Disk, Monochrome Monitor, Hercules® Compatible Mono/Graphics Card $1179

TECH TURBO PC/XT DESKTOP $629

Options:

Tech Turbo PC/XT Desktop with 20MB Hard Disk .. $1079

Tech Turbo PC/XT 20MB Hard Disk, Monochrome Monitor, Hercules® Compatible Mono/Graphics Card $1279

ART DESKTOPS

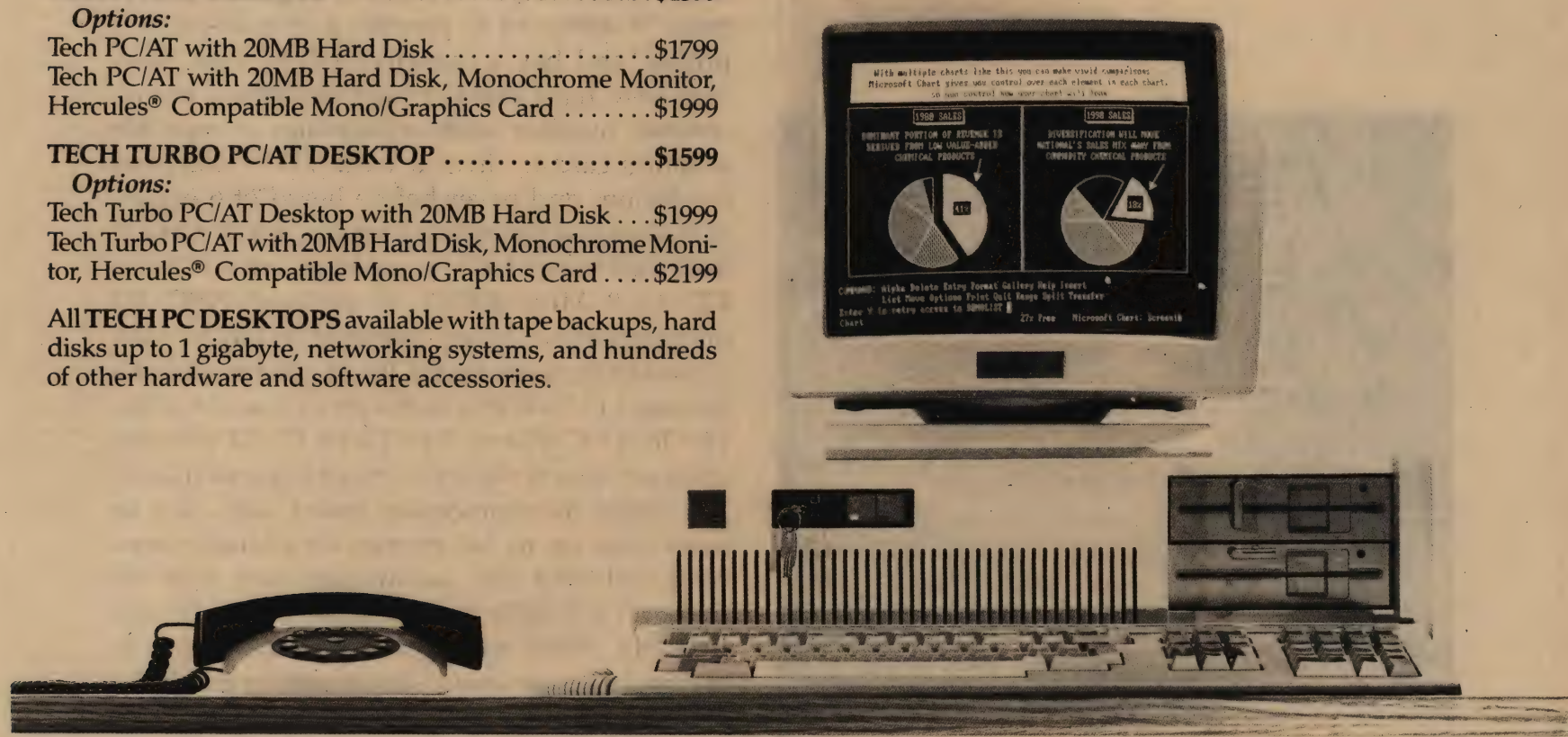
to 1 gigabyte with our new optical storage disk, the Tech Personal Computer Desktops represent the cutting edge of desktop microcomputer technology.

Tech Personal Computers, Inc. is a full service manufacturer of Micro Computer Products and offers a complete line of Desktop, Portables and Multi-User Computer Systems as well as an accessory line of over one hundred enhancement products. **Tech Personal Computers, Inc.** are all backed by a full one year warranty with additional maintenance coverage and extended maintenance contracts available through Momentum Service Corp. For more information concerning hundreds of Service Centers throughout the United States, contact **Tech Personal Computers, Inc.** at **(714) 754-1170.**

TECH PC/AT DESKTOP **$1399**
Options:
Tech PC/AT with 20MB Hard Disk $1799
Tech PC/AT with 20MB Hard Disk, Monochrome Monitor, Hercules® Compatible Mono/Graphics Card $1999

TECH TURBO PC/AT DESKTOP **$1599**
Options:
Tech Turbo PC/AT Desktop with 20MB Hard Disk ... $1999
Tech Turbo PC/AT with 20MB Hard Disk, Monochrome Monitor, Hercules® Compatible Mono/Graphics Card $2199

All **TECH PC DESKTOPS** available with tape backups, hard disks up to 1 gigabyte, networking systems, and hundreds of other hardware and software accessories.

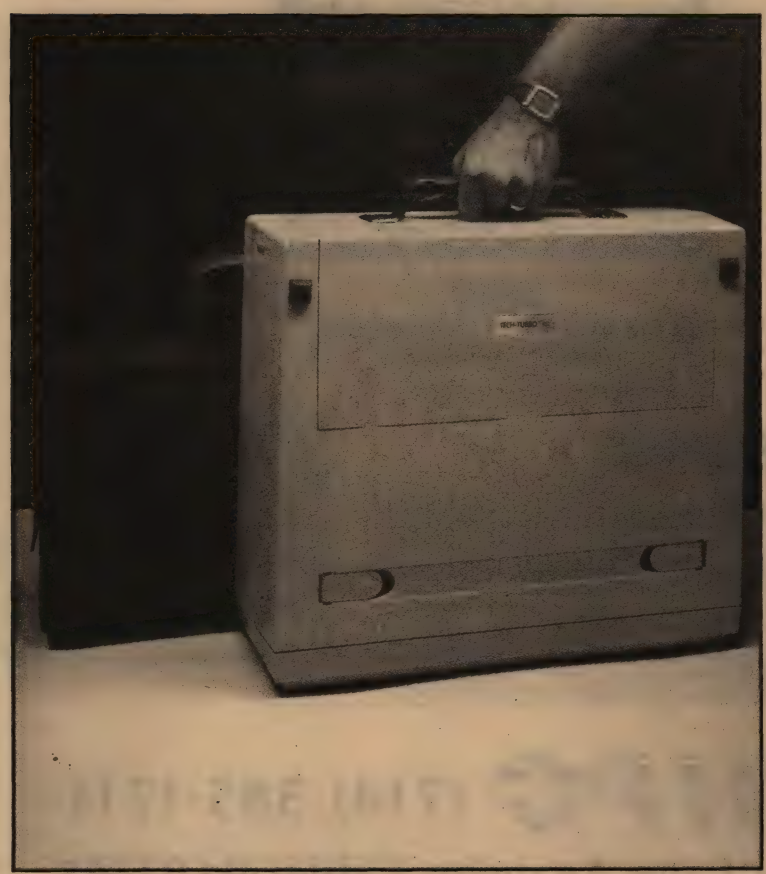


TECH PC **(714) 385-1711**

1911 Betmor Lane, Anaheim, California 92805

Telex 272006 Answer Back - TECH FAX: 71415568325

NOW YOU CAN TAKE IT WITH YOU WHEN YOU GO!



Tech Personal Computer Systems are designed and manufactured by Tech Personal Computers... The leader in quality, performance and state of the art computer system engineering...each of our portable, desktop, multiuser, and minicomputer systems are unparalleled in the industry for quality construction, dependable operation, complete software compatibility, and an unbeatable combination of product satisfaction guarantees, long warranty periods, and comprehensive third party maintenance.

At Tech PC we're out to capture your microcomputer business. No one matches our diverse line of high performance products, or our comprehensive system of support, warranty, and third party maintenance service options. Tech PC is a large Southern California computer design and manufacturing firm with computer research and design specialists, productions engineers, technical assistance staff, qualified sales personnel, and a strong management and investment team to provide you with state of the art products, state of the art reliability, and state of the art economy.

PORTABLES

Tech PC Portable Computers come in four different base models to match your computing needs. Our entry level Tech PC/XT portable computer is designed to provide a non-obstructive profile, and has a capacity to hold two thirty megabyte hard disks, a high resolution monochrome monitor with a Hercules compatible graphics card to drive it with 800 by 400 lines resolution, and never before heard of 6 expansion slots in a portable computer. If 4.77 MHz of Intel 8088 power isn't fast enough, try our Turbo 4.77 to 8 MHz 8088-2 or optional NEC V-2 microprocessor based portable machine. Designed to increase speed up to 170 percent of a standard PC/XT, this turbo gives you the edge. The Tech PC/AT and Tech Turbo PC/AT portable units are state of the art in portable performance. The 80286 microprocessor based units can be fitted with up to 240 megabytes of high speed voice coil hard disk technology, and with the Turbo AT's 10 MHz math co-processor socket and 10 MHz 80286 microprocessor the unit can manipulate large spreadsheets with unparalleled performance.

TECH PC

TECH PC PORTABLE COMPUTERS are available now in 4 different base models:

TECH PC/XT PORTABLE .....$ 899
Options:
Tech Turbo PC/XT Portable with 20 MB Hard Disk $1349
Tech Turbo PC/XT Portable with 1200 Baud Internal Hayes Compatible Modem and 20 MB Hard Disk $1549

TECH TURBO PC/XT PORTABLE $999
Options:
Tech Turbo PC/XT Portable with 20 MB Hard Disk $1449
Tech Turbo PC/XT Portable with 1200 Baud Internal Hayes Compatible Modem and 20 MB Hard Disk $1649

TECH PC/AT PORTABLE $1799
Options:
Tech PC/XT Portable with 20 MB Hard Disk $2199
Tech PC/XT Portable with 1200 Baud Internal Hayes Compatible Modem and 20 MB Hard Disk $2399

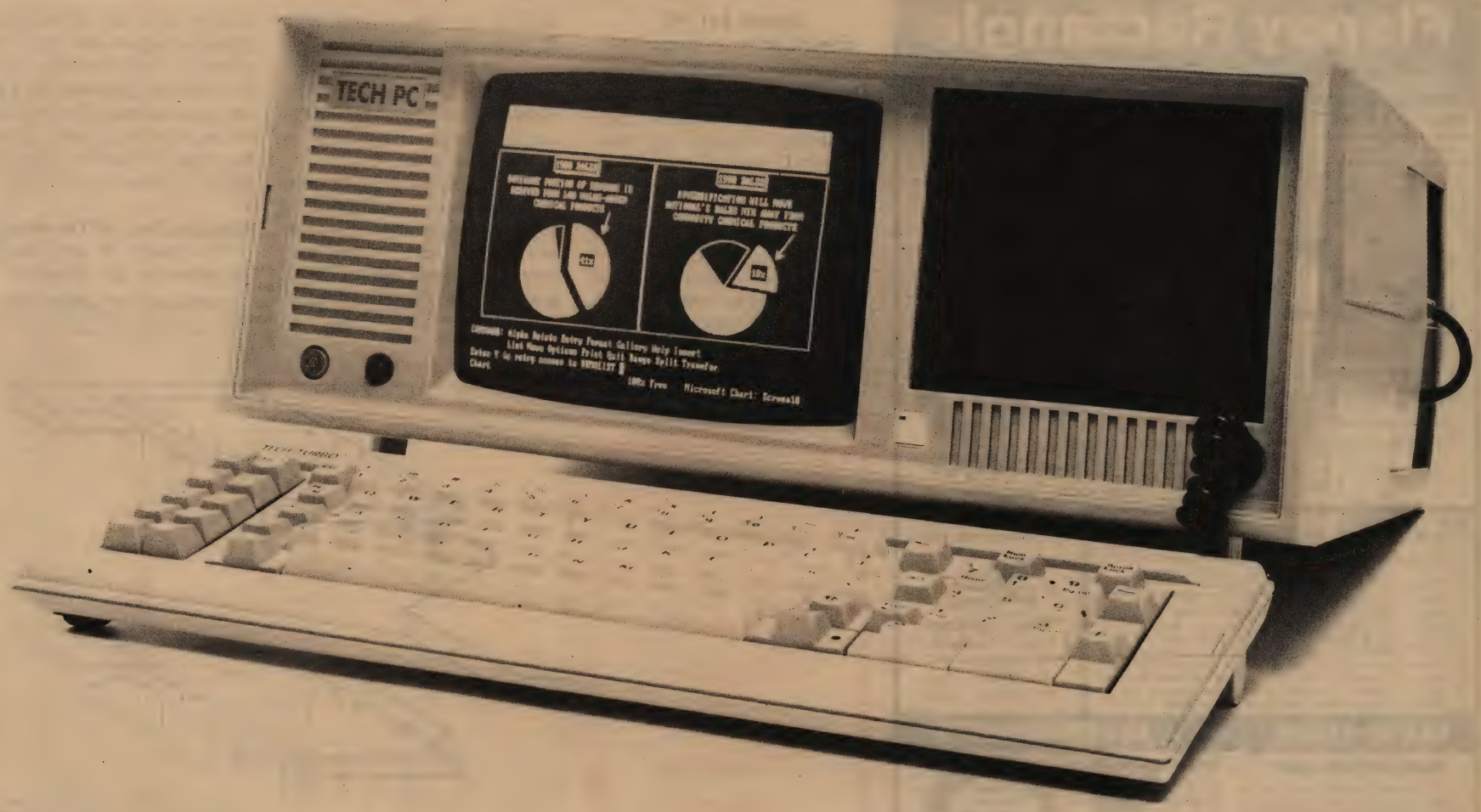
TECH TURBO PC/AT PORTABLE $1999
Options:
Tech PC/XT Portable with 20 MB Hard Disk $2399
Tech PC/XT Portable with 1200 Baud Internal Hayes Compatible Modem and 20 MB Hard Disk $2599

All TECH PC PORTABLES available with tape backups, hard disks up to 1 gigabyte, networking systems, and hundreds of other hardware and software accessories.

Tech Personal Computers, Inc.

(714) 385-1711

1911 Betmor Lane, Anaheim, California 92805
Telex 272006 Answer Back - TECH FAX: 71415568325



WHMT

continued from page 213

fine-print "shrinkwrap" license agreement with the copy I received. I am assuming from this that a purchaser can legally use the program on more than one machine, which is a big bonus if you have both an H-89 and a Kaypro, for example, each running its own version of CP/M, or if you use more than one terminal with a given CP/M machine, such as an H-19 on the desk at home and a non-H-19 compatible terminal for portable use while traveling. You could use the enhanced version for your Heath system, and the regular version on the other.

The distribution disk from TMSI comes with 17 files. They are:

WHM.COM	(6K)	The original Write-Hand-Man driver, without screen restore enhancements.
WHMCONF.COM	(3K)	Configuration program for customizing WHM.COM.
WHMT.COM	(8K)	Write-Hand-Man with screen restore.
WHMTCONF.COM	(4K)	Configuration program for WHMT.COM.
NOTEPAD.REL	(2K)	The Notepad application.
NOTEPAD.DAT	(2K)	The Notepad data file.
PHONEBOO.REL	2K)	The Phonebook application.
PHONEBOO.DAT	(3K)	The Phonebook data file.
CALENDAR.REL	(2K)	The Calendar application.
CALENDAR.DAT	(6K)	The Calendar data file.
DIRECTOR.REL	(2K)	The disk Directory application.
VIEW.REL	(2K)	The file-viewing window application.
CALCULAT.REL	(2K)	The 4-function Calculator application.
HEX.REL	(2K)	The HEX calculator application.
ASCII.	(3K)	an ASCII look-up table
OPCODES	(5K)	an 8080 opcode look-up table.

(Note: WHM occupies 6K on disk, but only uses 3K of program space once enabled; likewise, WHMT occupies 8K on disk, but only uses 6K in memory.)

As can be guessed from the ".REL" extents, the application files are written in machine language using a relocating assembler. The operation of Write-Hand-Man has already been discussed in detail by more experienced programmers; suffice to say that both the WHM and WHMT drivers provide a kind of miniature, limited, relocated version of the CP/M environment in high user memory, and that the applications, when called up by the driver, jump there and do their job without disturbing the original user program, which is left floating in limbo in its regular location. When the relocated application is finished, it exits with a single JMP instruction. This returns control to the main program, which can continue undisturbed.

This means that the WHMT driver program is a kind of universal operating system hook for people who want to write their own custom pop-up applications. It also means that while the custom program can be assembled with a regular CP/M assembler and tested and debugged with DDT.COM as a regular CP/M program, with some limitations, it must be assembled with a relocating assembler such as Microsoft's M80 or Digital Research REMAC in order to be recognized by the WHMT driver and actually used.

The various regular Write-Hand-Man applications have already been reviewed, so I will just give a few personal impressions of the salient points on the TMSI enhancements here. On the favorable side, the notepad, phonebook, and file-viewing window all allow you to print the output from the screen. This gives the user hard copy without having to exit the program to bring up a printer or having to copy or type the information from the screen manually, very handy indeed. Unfortunately, the calculator function does NOT allow this, which is too bad; I have used the calculator, which is full 14 digit floating point, a great deal. Being able to prepare paper "tape" of your financial calculations at tax time, etc. would be handy. Simple trig functions, or at least a square root key would also have been nice, but probably would have made the calculator too complicated and bulky for 2K of memory. I don't do enough programming to use the HEX/Decimal calculator, but I can see how handy it is to have it for those who do.

The file view program is especially nice. I used it extensively for footnoting and indexing a book; You can load the table of footnotes or the index into a word processor, and then use the viewing window to check the actual items in the regular text as you write the footnotes. This is not a true multi-tasking "window"; you can't edit the file you are viewing, only look at it, but it is still very useful. The global Search-and-Find feature is VERY useful for this kind of work, though it does equate upper and lower case characters, (for example, it can't distinguish between "Ford" and "ford," a minor disadvantage).

The directory application, while not as elaborate as those that come with later versions of ZCPR3, for example, does share one very nice feature with them: when used with Heath's CP/M, it allows you to examine the directory of ANY disk, even one that is not currently logged, without losing your place in your regular program.

The calendar application is not a real-time clock calendar, by the way, nor is it a file with a 365-day data equivalent of a paper calendar. What it really is, is a 14 page appointment book, set up to record two weeks of business meetings, etc.

I haven't used the phonebook application much, as I already have an address and number file, called FAMDEX, which I maintain with a regular screen editor, using the editor's "FIND" command to locate a given name, phone number, or Zip code from a pseudo-random table of names and addresses. However, it is very nice. It is really a miniature database program, allowing you to search matching fields, etc. Like the Notepad, it is limited to 256 byte "pages" of data.

Compatibility

Even in the memory-fat world of MS-DOS, compatibility is always a concern with memory-resident programs, especially when more than one is used at a time. Running a keyboard-mapping macro program, a print spooler, and a pop-up from a different vendor, for example, can generate real headaches, unless you go to an integrated system like Microsoft Win-

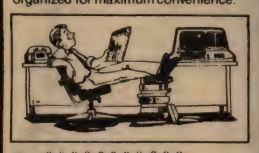
continued on page 223

Floppy Rectangle

Jam-packed Plastic References

MICRO CHARTS®

MICRO CHARTS are 8 ½ by 11 inch professional, time-saving, plastic summary cards packed with information on: microprocessors, electronics, programming, and more. These colorful cards are carefully organized for maximum convenience.



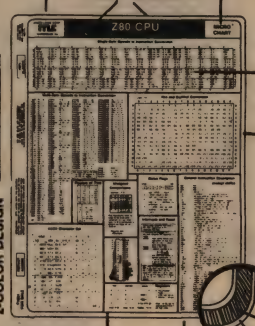
MONEY-BACK GUARANTEE
Try using MICRO CHARTS for 14-days. If you are not completely satisfied we will give you a prompt and full refund including postage both ways.

ATTRACTIVE 2-COLOR DESIGN

SOLID PLASTIC — LASTS A LIFETIME

CRYSTAL CLEAR PRINTING

TWO SIDES — COMPREHENSIVE



INSTANT ACCESS TO DATA YOU NEED

FULL 8½X11" SIZE — NO MORE PANELS TO UNFOLD OR BOOKLETS TO SEARCH THRU

LOW COST only $5.95 each LIFETIME TOOL

MODULAR — MAXIMUM SPACE

ALL KEY DATA IN ONE PLACE

10 MIL SOLID PLASTIC BASE

2 MIL CLEAR PLASTIC PROTECTION LAYERS

CANNOT PEEL APART

CLEARS WORKSPACE OF BOOKS AND MANUALS

ORDER TODAY

NEW MODEM ORDER LINE

24 hrs - 7 days — 300/1200 VISA/MC - Fast interaction for long distance callers. Call now: 201-342-8101

Code	Description
MC-BIBM	BASIC (IBM PC/XT/AT & GW) — complete (densest card)
MC-CL	"C" Language — comprehensive (incl. 100 lib. functions)
MC-SHEL	UNIX Shell programming language — by author of C card
MC-IBAS	15 minute BASIC - easy intro to programming
MC-ALG	Useful Basic subroutines — easy conversion to assembly
MC-8086	8086 & 8088
MC-Z80	Z80 CPUS
MC-6502	6502 (65XX)
MC-8085	8080 & 8085
MC-8048	8048 Family
MC-COMP	Function of basic electronic parts — zeners to OP-AMPS
MC-7400	54/7400 TTL IC pinouts — comprehensive tabular format
MC-WS	Wordstar — twice the info of overlays at half the cost
MC-STAT	Computerized sampling graphs — for testing, Q/C, etc.

MPU cards have: full instruction set (all details); disassembly matrix, ASCII, hex/dec, interrupt struct, pinouts, diagrams, & much more. Hex machine codes - not binary.

Micro Logic Corp.
P.O. Box 174, Dept A13
Hackensack, NJ 07602
(201) 342-6518 — Voice
(201) 342-8101 — Modem

MICRO LOGIC **MICRO CHARTS®**

easy way to order

Simply write the quantity and codes on the back of your check or money order and mail to the above address. No letter or order form needed. Price is $5.95 each. Postage is $1 for any quantity. Minimum order is 2 cards. Order today.

BACK OF CHECK

Send:
(1) MC-8086
(1) MC-COMP

NEW EASY WAY TO ORDER

Minimum order: 2 cards please

VOLUME DISCOUNTS — Dealers, Schools, Catalogues, Sales Aids, Premiums, Clubs — INQUIRIES WELCOME

Zenith 151 PC

continued from page 213

there some possibility that the modification wouldn't work and I would be left with a permanently screwed up video board? I decided to take no chances, and ended up designing a "safe" modification using the information provided by Zenith.

The modification described here involves no trace cutting, no on-board gates, in fact, no permanent changes to the video board whatsoever. It involves a small module which replaces an integrated circuit (IC) on the video board. The IC is removed from its socket, replaced by the module, then reinserted in a socket on the module. The schematic for the modification is shown in Figure 1 on page 99.

The signal for U338 is split at the module, passing directly to its destination through resistor R1, and delayed and inverted through gates G1, G2, and G3. The combined signal is logic high only if both contributing signals are high. This effective AND operation occurs because the gates on the 7406 are open collector. A simplified timing diagram, showing why the module narrows the sync signal, is also shown in Figure 1.

Construction Of The Module

The single IC and passive components are mounted on

continued on page 224

Tis the Season to give that special person Computer Shopper at our low Holiday Rates

See details on page 54.

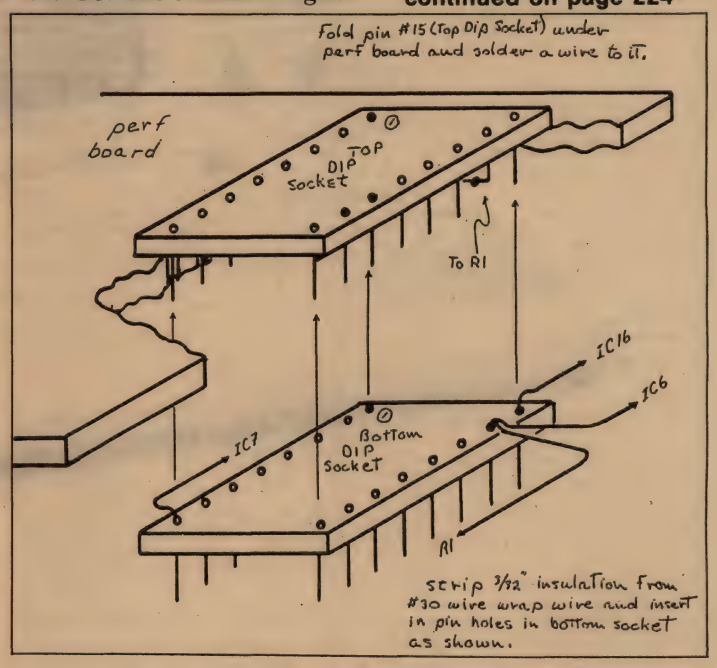


Figure 3 Piggy-back Socket for sync modification board.

WHMT
continued from page 222

dows, which really amounts in many ways to a whole new operating system. In the more confined 64K world of CP/M, special care must be taken.

Write-Hand-Man, by using only two special characters, the trigger that calls it up (the provided default is "Break" or "CTRL-Shift-@") and the "clear-home" sequence that it finishes with, and by making those characters re-assignable in a configure program, has done a lot to ensure compatibility. Keeping the memory requirement small helps a lot, too. The TMSI enhancements, besides adding a small additional memory requirement, affect compatibility in a couple of ways.

The manual, (which is very nicely laid out, by the way, and quite useful; it has 42 pages, in a 8½" x 5½" digest size, and clearly explains the functions) explains that the new screen restore function itself supports the following list of terminals:

Televideo 910, 920, 925, 950
SORC
Heath/Zenith H-19, H-29, Osborne
DEC VT52, Kaypro
Freedom 50/100, QX-10
Wyse 50/100, Hazeltine 1500
ADM 3A/31

It also ought to work with any other terminal that emulates any of the above, providing the emulation is adequate. ANSI VT100-style terminals are NOT supported, as this would make the program far too large and complex. Please note that we are talking about the screen-restore function only, here, not the H-19 character graphics that are used in displays like the phonebook or calculator. For these, you must have an H-19 terminal, or a terminal that can emulate the Heath/Zenith H-19 character graphics. Low cost kit-built terminal boards like the ZRT-80 and the Linger 65/9028VT OUGHT to work, as they have a complete H-19 emulation mode. However, if you build up one of these kits with a surplus ASCII parallel keyboard, you may have to make allowances for differences from the standard H-19 keyboard. For example, you may have to type "Esc-R" when the WHMT instructions call for a "WHITE" function key, etc. I also ought to point out that the screen restore doesn't always handle H-19 graphics perfectly; it sometimes leaves the terminal toggled so that it ignores reverse-video characters in the original main program display, a minor nuisance in most programs.

Software compatibility is another can of worms entirely. Write-Hand-Man WILL work with other memory-resident programs such as print spoolers, etc. providing there is adequate memory available, and if the other program uses a trigger character, both that program and Write-Hand-Man must be configured so their trigger characters do not conflict. The manual warns you to load the spooler or other program first, and then engage WHMT. The 5/86 release of the manual also warns of incompatibility with ED-a-Sketch, (because of the way it uses graphics), Textpro, (no available trigger character) and MDM730, a modem program.

I can add another bug to this list, a fairly serious compatibility problem with the Software Toolworks screen editor, PIE 1.5. Early releases of PIE don't work at all; the trigger character doesn't get through. I tried reconfiguring WHMT to use a number of different trigger characters, but had no luck. Later releases, 1.5(d) and after, do work, but there is still an annoying and potentially serious bug: The operation works fine and appears normal, but at some random time, anything from a few minutes to an hour or more after engaging WHMT and loading a PIE file to edit, the whole CP/M system crashes! I am just guessing, but it may be that this is because PIE was originally written as an HDOS program, and then converted over to the CP/M operating system.

I have tested WHMT with several other screen editors, including Magic Wand, VEDIT, Scribe, and CP/M ED, with no problems. The bug with PIE is particularly annoying for me, as I use PIE for a lot of routine typing. For the time being, I would recommend that you NOT use WHMT with PIE for any vitally important files. If you do use it at all, (I DID once run for several hours without a crash...) save your file frequently! Even disengaging WHMT before loading a PIE program is no protection; WHMT "poisons" the operating system for PIE. You have to RESET and cold boot CP/M again to prevent eventual crashes.

In conclusion, then, the TMSI enhanced version of Write-Hand-Man is a worthwhile piece of software, especially for use in a busy office or professional environment, or for serious programmers who want a beautifully pre-engineered shortcut for writing their own pop-up applications. A couple that come to mind are an automatic save program that would automa-

continued on page 224

C-128 Info
continued from page 140

disks off the master disk. I hit the proper key to start formatting and...Yup, the master disk was still in the drive and I "formatted," i.e., erased it! I called Berkeley the next morning and, when I explained what I'd done, I was told to send back the defective disk and they would replace it at no charge. And they did exactly that. So they may not *say* they have a backup disk policy but, in actuality, they do.

I have also contacted them both by mail and phone with questions about operating GEOS, and I have always gotten helpful answers. All in all, Berkeley has a terrific product in GEOS and they provide outstanding user support. I hope you can bring that to the attention of your readers.

Sincerely,
John Lawlor

GEOS Reply

Thank you for the fine letter. It is nice of you to come to Berkeley Softworks aid. I have no doubt that the people at the company are a very nice bunch of people. I have heard similar reports of their excellent response to customer queries.

Your point about the mouse is well taken. I certainly agree with you that a mouse is much easier to use than a joystick.

Though Berkeley may offer to send replacement disks if the original fails, this is not the same thing as having one available when a master fails. For those who use their computers as toys, it may be acceptable to wait a week while UPS brings a new disk. For me (and I expect any other serious computer users), this is not the case.

I offer you an example. As a writer, I must meet deadlines. When an editor wants an article this week, he doesn't want me calling to tell him I can't make my deadline because I have to wait for a new operating system disk to be sent.

I live in Florida. We have bad thunderstorms that wreak havoc with the power lines here. In the last three weeks, I have had the operating system on my word processing disk wiped out. I got out my master operating system disk, ran a program called SYSGEN and put a new copy of the operating system on the disk. That was all I had to do to get back to work.

Like you, I thing GEOS is an impressive work. It gives an easy of use that many beginning computerists need to get over their initial hesitation in using a computer.

It would reassure me to know that for an extra $5, I could get a backup copy and have it handy. I would be much happier if GEOS were provided with a backup disk in the box. I would be even happier still if it were not copy-protected. ●

1-800-423-9873 ext 804

HARD DRIVES

MINI SCRIBE 4020 (19 MEG)	$325
DISKTRON 526 (26 MEG)	$365
MICROPOLIS 1302 (26 MEG 30MS)	$400
MICROPOLIS 1304 (51 MEG 30MS)	$650
PLUS MANY MORE FROM 5 TO 85 MEG	
>>> SYQUEST 5MB REMOVEABLE	$340
SQ100 5 MEG CARTRIDGE	$55
EXTERNAL HARDDRIVES 15 TO 80 MEG	
IBM OR Z-100 BUS PRICED FROM	$450

WE STOCK HUNDRED'S OF ONE OF A KIND ITEMS . FROM AT CHIPS TO Z-100 CARDS. EPROMS,PALS MEMORY ,74LS PLUS OTHERS CABNETS,POWER SUPPLYS,FANS ETC.ETC SOFTWARE IBM-MAC-CP/M-TI PLUS MORE ALL AT ROCK BOTTOM PRICING, SO BEFORE YOU BUY CHECK WITH US FIRST AND SAVE !!!

ZEPHYR's

EXCLUSIVE SOFTWARE

Good Software! Great Prices!

For YOUR
APPLE II+/IIe/IIc IBM PC/XT/JR
Pick the Ones YOU Want:

☐ FINANCER™—10 most needed financial calculations in easy to use package. Menu selectable for: amortization schedule, present values, future values, simple & compound interest, installment loan, days between dates, & more. Output to screen or printer. "FINANCER is best"-G.W.,Montana $19.95

☐ MUSICMAN™—Compose music on screen, placing notes, rests, sharps, flats on musical staff. Vary key, pitch, tempo & legato to perfect your music. Save your compositions to disk to replay or revise later. Comes with musical selections. 80 column display. $29.95

☐ ASTROSTELL™—Learn the constellation using your computer, all 88 included. Four levels star brightness simulate sky on screen. Gives star names, positions of galaxies, nebula, etc., plus lore & observing tips.80 column screen. "A Perfect Delight"-Prof. M.F.,Minnesota. $29.95

☐ STATCALC™—Key statistical functions for student or experienced user. Includes correlation & regression, normal, T, Poisson, binomial, Chi-square, distributions, data handling for sorts, mean, standard deviation, range, median. Save data to disk. Manual explains statistics and program use with examples. $39.95

☐ HOROSCOPICS™—For your birthdate and time the exact sky conditions are calculated and horoscope chart printed out, with zodiac, sun, moon & all planets. Includes astrological reading, sun & moon sign, ascendant, conjunctions & oppositions. $24.95

☐ BIO-DATA™—Calculates Biorhythms for any time period you specify and displays on screen or to printer. For your birthdate gives celestial longitude of sun and your astrological sign. Determines Julian Day #, days since birth & day of week for birth. $19.95

☐ VOCABULATOR™—Improve your vocabulary at selectable skill level, from high school to sequipedalian. Use multiple choice or quick review mode. Add words you want included. "Recommended: Excellent Program"-Electronic Learning Mag $29.95

☐ ASTROCALC™—Calculates for sun, moon, & all planets rise/set times, positions in sky, orbital elements, brightness, phase, sidereal time, & much more for any date, time and location. Manual explains astronomical theory & program use. Thousands of satisfied users worldwide! $29.95

☐ SUPERCAT™—Professional level cataloging for up to 5,000 books per directory with hard disk or 1000 per floppy (400 for Apple). Multiple subjects & authors, call #, title, publisher, etc., plus fields to customize. Print 3x5 index cards & reports in various formats. Sort and retrieve data by any field. Fast and easy to use. $49.95

☐ CATMAN™—Catalog your books, records, tapes with ease. Store author, title, and subject for up to 3000 item per floppy(1500 for Apple). Use search options to to get listings on screen or printer. Your choice if full power of Supercat not needed. $19.95

☐ BIO*CELL™—Introduction to cell biology. Cell structures for plants & animals are illustrated and organelles explained. Survey of cell types. Introduction to genetics & DNA molecule and how it codes information. Glossary of biological terms & background on cell studies. For 9th grade & up. $29.95

☐ COMETWATCH™—All about comets including Halley's! Three programs to calculate comet data, physics of comets and how to observe them. On screen plot of any comet orbit with sun & planets for reference. Halley/Sun/Earth encounter for any return, past or future. Halley position in sky for 1985/86 with Alt & Az. $29.95

☐ PHYSICALC™—Introduction to Physics for high school / college level. All fundamental concepts including mechanics, gravity, electricity, light, quantum mechanics, and relativity. 30 key equations explained with easy on screen calculations. With example problems, glossary and physics history. $39.95

☐ CHEMICALC™—Introduction to Chemistry for high school / college level. Includes atoms & molecules, chemical reactions, gas laws, periodic table, solutions, acids and bases. Illustrations of concepts. With example problems (& solutions), chemistry terms & brief chemistry history. $39.95

☐ HEADLINER™—Print banners and signs on any 80 or 132 column printer in letters up to 13" high (smaller sizes, too). Any length headline. Great for parties, kids, offices, stores. Get your message across! On PC MAG Holiday '85 Wish List. $19.95

FREE CATALOG CALL OR WRITE

ORDER TODAY!

By phone or mail. Check, M.O., credit card (# & Expir. Date). Add $2 shipping ($4 overseas). PA add 6%. Give COMPUTER TYPE. JOIN OUR THOUSANDS OF SATISFIED CUSTOMERS in 50 states and more than 60 countries, including homes, businesses, schools, & governments. Fast shipment!

ZEPHYR SERVICES
306 S. Homewood Dept. F
Pittsburgh, PA 15208
☎ 412-247-5915
ORDER BY PHONE 9AM-9PM
Mon. To Sat.
OUR 5th YEAR OF BUSINESS

Zenith 151 PC
continued from page 213

perf board as shown in Figure 2 on page 213. The piggy back socket is fashioned for two DIP sockets as shown in Figure 3. Low profile solder tail sockets are used to conserve space. Carve down the lower socket if you cannot get good contact with the pins from the upper socket. Use #30 wire wrap wire for wiring. Make sure the stripped wire ends are deeply embedded in the bottom socket so that no bare wire protrudes above the pin holes. Solder a piece of wire to the bent over pin on the upper socket. Poxy the socket-perfboard-socket sandwich together. Hard wire the gates and passive components and you are done.

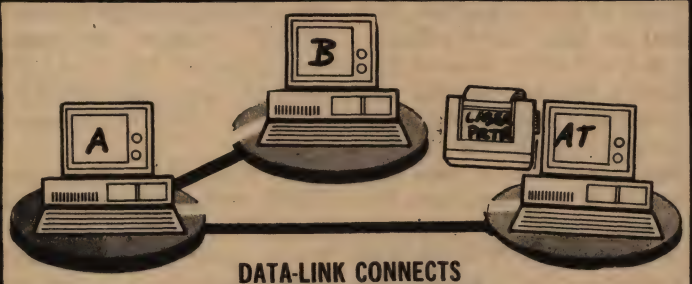
Turn off your computer, remove the video board and hold it with the component side up and the video connector on the right. The IC you want to remove, U338, is a 74LS175 located in the middle of the board about one third of the way in from the video connector. Remove this IC by prying up on it with a small screwdriver. Make sure you get just the IC and not the socket. Better yet, use an IC extractor tool which is available from most electronic supply stores for a few dollars. Insert the module into the vacant socket, then reinsert the IC in the socket on the module. Be sure pin 1 of the IC is in the upper left corner. If you have the 309 video board instead of the 309A board set the jumper on J303 to "C" and jumper on J305 to "-". With the 309A board it doesn't matter where the jumpers are. Now plug the video board back in, attach the monitor, and turn on the computer. You should be in business.

Conclusion

When I turned on my computer after installing the sync modification board the screen popped up sharp and clear. No tear, no skew, no jitters. Just rich, vibrant colors. Hmmm... now, let's see. I could use a six pen plotter, or maybe a laser printer.

If you would rather not do the hand wiring or even the assembly, I can provide you with a PC board ($8) or a wired and tested module ($15). Just write me at the address below:

Frank Roe
204 S. 9th
Bozeman, MT 59715



DATA-LINK CONNECTS 255 PERSONAL COMPUTER

* Easy-to-use Network for IBM PC/XT/AT
* NETBIOS compatible running PC-DOS 3.1
* 1 M-bps transfer rate

With **DATA-LINK** implements VLSI technology to transfer data at 1M-bps. Up to 255 PCS can be connected within a **Network**, and share high speed laser **Printers**, and **performance of the Network facilitate efficient message transfer and sharing of data.** You can access and update shared data files quick.

* August Special: Whole System 640K 1DR, 1 Monitor **$595**
* Dealer Inquiry welcome

DATA MART CO.
204 S. Garfied Ave.
Monterey Park, CA 91754
Tel: (818) 572-8500, (818) 281-0261

WHMT
continued from page 223

tically save your word processing file every so many minutes or so many hundred keystrokes, or an automatic reminder to the console for the operator to do the same thing. It is also a heartening sign for an old Heathkit H-89 user that companies like TMSI, D-G, and Cleveland Codonics are still bringing out new hardware and software products supporting a popular machine long after the parent company, or rather the company that swallowed the parent company, has abandoned it and joined the lemmings swarming mindlessly onto the IBM-PC bandwagon.

TMSI's enhanced Write-Hand-Man) (WHMT) at a glance:

Type of Program: Memory resident pop-up utilities package.

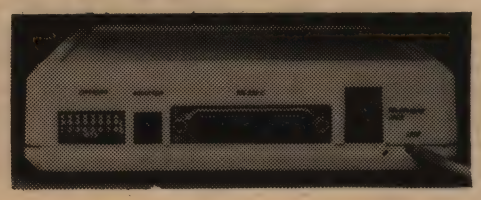
Operating system: CP/M (64K system recommended).

Memory Requirement: As little as 3K-6K for the driver (see text). Each relocating application requires 2K on the disk. Each data file can be configured to whatever size on disk is adequate. Typically, all the applications, the driver, and a set of average-size data files will fit in 35-40K on a system disk, but will only use a few K in memory at a given time.

Price: $49.95 list, for a package including both the original Write-Hand-Man and all the TMSI WHMT enhancements. Other packages are available, including special support for custom applications.

Supplier: Technical Micro Systems, Inc., 366 Cloverdale, Ann Arbor, MI, 313-994-0784.

MODEM
Only $109



300/1200 BAUD works with virtually every computer system.

We have a cable for your system.
CALL FOR PRICING.
- Direct connect
- External AC Adapter
- 8 LED Status Indicators
- Auto Answer and Dial
- Hayes Compatible AT Command Set
- Bell 103 and Bell 212A Compatible
- Tone or Pulse Dialing
- Free CompuServe Access Time
- Convenient Telephone Connection Jack
- Standard DB25 RS-232-C Connector
- 8 Option DIP Switch
- FCC Approved
- Full 1-Year Warranty
- 29 Page Full-Color Users Manual
- Toll Free Service and Assistance Number

MEGATRONICS

To Order:
800-232-6342
Nationwide
801-752-2642
Inside Utah
We'll beat any advertised price!
Use your VISA or MasterCard
Same Day Shipping

55 NO. MAIN STREET, LOGAN, UTAH 84321

Coming Events

If you know of or have a trade show, swap meet or club meeting connected with the computer field, we'll run an announcement in the COMING EVENTS section FREE of charge.

SEPTEMBER

September 2-4, 1986
COMDEX/AUSTRALIA will be held at the RAS Showground, in Sydney, Australia. This show will offer a 30-session Conference covering topics of special interest to corporate and business end-users. For additional information contact the Interface Group, 300 First Avenue, Needham, MA 02194; (617) 449-6600

September 2-5, 1986
The first annual COMDEX/AUSTRALIA dedicated exclusively to computer industry marketers, independent retailers, distributors and dealers, will be held at RAS Showground in Sydney, Australia. For additional information contact The Interface Group, 300 First Avenue, Needham, MA 02194; (617) 449-6600.

September 4-6, 1986
The second KANSAS CITY COMPUTER & BUSINESS EQUIPMENT SHOWCASE, an exposition for small computer and business equipment users, will be presented at the Kansas City Convention Center. Geared to business, professional and corporate users of computer systems and business equipment. For additional information contact The Interface Group, 300 First Avenue, Needham, MA 02194; (617) 449-6600.

September 4-6, 1986
The LONG ISLAND COMPUTER & BUSINESS EQUIPMENT SHOWCASE, an exposition for small computer and business equipment users, will be presented at the Nassau Coliseum, Long Island, NY. Geared to business, professional and corporate users of computer systems and business equipment. For additional information contact The Interface Group, 300 First Avenue, Needham, MA 02194; (617) 449-6600.

September 6-7, 1986
The COMPUTER SUPERMARKET SHOW AND SALE will be held at the San Mateo County Fairgrounds, San Mateo, California. This Supermarket Show and Sale is a two-day personal computer show where thousands of new products will be available for immediate purchase by show attendees. Accessories, supplies, peripherals and complete personal computer systems representing hundreds of brand names will be available to shoppers at discount prices. The show will be open to the public from 10am to 5pm Saturday, and 10am to 4pm Sunday. Admission is $6.00. For additional information, call or write Microshows, 1209 Donnelly Avenue, Suite 203, Burlingame, CA 94010; (415) 340-9113.

September 7, 1986
The MICRO COMPUTER FAIR will be held at the Oak Lawn Masonic Lodge, 9420 S. 52nd Avenue, Oak Lawn, Illinois. Personal, business, hobby, hardware, software, supplies, accessories. Admission $3 per person. For additional information contact Tom Zarecki (312) 839-2611.

September 10-11, 1986
The FIBER OPTIC INFORMATION TRANSPORT—THE FOURTH BUILDING UTILITY Seminar will be held at Breckenridge Hotel in St. Louis, Missouri.The seminar will focus on the economic application of fiber optics, and offer insights into trends and standards that will impact the flexibility and useful lifetime of these networks. Conducted in a classroom environment, the seminars stress the practical aspects of structured fiber and wire cabling systems rather than esoteric electro-optical theory. For additional information contact Trellis Communications Corp., 5 Manor Parkway, Salem, NH 03079; (603) 898-3434.

September 11-13, 1986
The ninth TAMPA COMPUTER & BUSINESS EQUIPMENT SHOWCASE, an exposition for small computer and business equipment users, will be presented at the Curtis Hixon Convention Center. Geared to business, professional and corporate users of computer systems and business equipment. For additional information contact The Interface Group, 300 First Avenue, Needham, MA 02194; (617) 449-6600.

September 16-18, 1986
HIGH-TECH MARKETING WEEK WEST, the International Conference for Technology Marketers, will present a first-of-its-kind educatinal program developed for marketers of high-tech equipment, supplies and accessories. The three-day conference will be held at the Hyatt Rickeys in Palo Alto, California. This conference will offer over 35 comprehensive sessions covering the full spectrum of high-tech marketing. For additional information contact Carol Harrison, CMC, 17 Washington Street, Box 4990, Norwalk, CT 06856-4990; (203) 852-0500

September 20-21, 1986
The PEORIA SUPERFEST 86 will be held at Exposition Gardens, W. Northmoor Road, Peoria, Illinois. Activities: Amateur Radio and computer displays, huge flea market, FCC exams for all classes Saturday and Sunday, free bus to Northwoods Mall on Sunday. Gate opens at 6am, Commercial Building at 9am. Admission is $3 in advance and $4 at the gate. For additional information contact Superfest 86, P.O. Box 3461, Peoria, IL 61614

September 25-27, 1986
The fourth annual PERSONAL COMPUTER FAIRE will be held at Brooks Hall and Civic Center, in San Francisco, California. This faire exhibit floor will feature personal computer systems, software, peripherals, after-market add-on products, magnetic media, supplies and related services. The faire will also offer a 35-session Conference geared to the business use of microcomputers and a separately priced Professional Development Seminar program. For additional information contact the Interface Group, 300 First Avenue, Needham, MA 02194; (617) 449-6600.

continued next page

KEYBOARD STORAGE DRAWERS

$49.00

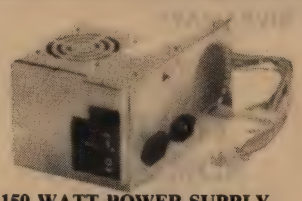
MASTER POWER SWITCH

$59.00

SOFTWARE SOFTWARE

LOTUS 1-2-3 $299

REPORT WRITER	109	JAVELIN	399
SYMPHONY	419	D-BASE III PLUS	419
SPELLING CHECKER	99	DISPLAYWRITE III	339
MULTIMATE	235	STORYBOARD	199
MULTIMATE ADVANTAGE	279	DOS 3.1	70
		DOS 3.2	75



150 WATT POWER SUPPLY
$89.00

8 MHz, 1 Meg RAM on the motherboard, One 1.2 MB Floppy, One 20 MB hard disk drive, Serial/Parallel adaptor—$1995.00

ACCESSORIES UNLIMITED

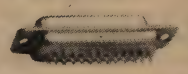
1-800-225-2741 • 516-231-8086

275 MARCUS BLVD.
HAUPPAUGE, NY 11788

Add 2% for Shipping/Handling and Insurance
VISA or MASTERCARD ACCEPTED

DELTA COMPUTERS & CONNECTORS

D-SUB SOLDER CUP



DB-9 $0.28 ea. DB-15 $0.39 ea. DB-25 $0.38 ea.
DB-37 $1.10ea. DB-50 $2.40 ea.

We have all sorts of IDC (Ribbon Cable-type) Centronic and D-Sub Connectors. Call us for a free wholesale catalog. We specialize in custom cables and computer cables.

RS-232 TEST DEVICES

Mini Tester

7 Bi-Polar L.E.D's Determine Hi and Lo or open data lines. A great tool for techs and computer engineers. Great item for retail display come with blister package. Easy to display. Price .....$6.00 each

Gender Changers M/M or F/F ...$3.00 each

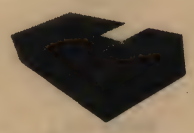
Surge Protectors

Data Line Surge Protectors. M.O.V.s protect lightning and electrical spikes entering the RS-232 Ports. Two models available CA-120-3 with lines 2, 3 & 7 protected... .....$6.00 each
CA-120-7 lines 2, 3, 4, 5, 6, 7 & 20 protected .....$7.00 each

RS-232 Jumper Boxes

Customize RS-232 interface devices many uses. Create for any type of date line changes, etc. Comes in three configurations. Male to Male, Female to Female or Male to Female. Price ....$3.00 each. Blister package. Easy retail display.

Erasing Unit
Model EU-156



• Exclusive wave design • Quick erasure time, 7-12 min. • Industrial all-steel, heavy duty unit • Timer • Over 150 chip capacity. Price $199.00

The Programmer

Model No. SCC-512B • 1K-512K devices + EEPROMS • Large memory buffer 256K • Set programming: the SCC-512B can program up to 8 different EPROM images in various combinations • 20 commands including move, edit, fill search, etc. functions • User selectable device menu • Display LCD 48 chan. 2x24 (Back Lit.) • RS-232C for data transfer • Communication software for IBM price $895.00

Data Transfer Switch

ABDE RS-232 Data Switch 4 Port Data Switch... .....$28.00
ABDE Parallel 4 Ports Parallel Data Switch $29.00

Our products are best in quality and pricing. We give you unconditional money back guarantee if you return the merchandise within 30 days from the date of purchase or shipment. Minimum Order $25.00.

DELTA COMPUTERS & CONNECTORS
5149 Buford Hwy.,
Atlanta, GA 30340
1-800-237-CHIP
PH: (404) 458-4690
FAX: (404) 457-3388

Coming Events
continued from page 225

September 26-28, 1986
The Association for Women in Computing announces its FIFTH ANNUAL CONFERENCE to be held at the Embassy Suites Hotel, Laclede's Landing, St. Louis, Missouri. The theme of the conference is "Today's Woman: Computer Literacy for Survival." For additional information contact AWCC'86 Conference Information, 407 Hillmoor Drive, Silver Spring, MD 20901.

September 28, 1986
COMPUTER CENTRAL, the multi-vendor personal computer show for everyone! New and used hardware, software, peripherals, supplies, parts, etc. This show will be held at Holiday Inn, 860 Irving Park Road, Itasca, Illinois. The show hours are from 9:30am to 4:00pm. Admission is $4. For additional information call (312) 940-7547.

OCTOBER

October 4, 1986
The Bay Area Computer Swap is a one-day personal computer swap meet where thousands of new and used products will be available for immediate purchase by show attendees. This Swap will run for one day at the Cow Palace, San Francisco, California. The show will be open to the public from 10:00am to 5:00pm. For additional information call or write MicroShows, 1209 Donnelly Avenue, Suite 203, Burlingame, CA 94010; (415) 340-9113.

October 5, 1986
The MICRO COMPUTER FAIR will be held at the Oak Lawn Masonic Lodge, 9420 S. 52nd Avenue, Oak Lawn, Illinois. Personal, business, hobby, hardware, software, supplies, accessories. Admissin $3 per person. For additional information contact Tom Zarecki (312) 839-2611.

October 9-11, 1986
The second DENVER COMPUTER & BUSINESS EQUIPMENT SHOWCASE will be held at the Denver Merchandise Mart. The show will feature hundreds of computer and business-related products from local and national vendors. The show will also present a professional education program offered free upon admission. Show hours are 10am to 6pm Thursday and Friday; 10am to 5pm on Saturday. Admission is $10 at the gate, or $5 with discount tickets available from participating exhibitors. For additional information contact the Interface Group, 300 First Avenue, Needham, MA 02194; (617) 449-6600

October 16-18, 1986
The seventh ATLANTA COMPUTER & BUSINESS EQUIPMENT SHOWCASE, an exposition for small computer and business equipment users, will be presented at the Atlanta Civic Center. Geared to business professional and corporate users of computer systems and business equipment. For additional information contact The Interface Group, 300 First Avenue, Needham, MA 02194; (617) 449-6600.

October 17-18, 1986
The Alabama Educational Computing Conference (AECC) will be held at Auburn University in Montomery. The conference is sponsored by the Alabama Council for Computer Education and will provide workshops, lectures, paper presentations, etc. for all levels of computer using educators. An extensive hardware/software display is also included. For information contact ACCE, P.O. Box 6105, Dothan, AL 36302.

October 18, 1986
The 12th Philadelphia Area Micro Show will be held at the Valley Forge Convention Center. Over 300 vendors will sell and display personal computer products of all kinds including hardware, software, books, supplies, accessories and parts. Show hours are 10 am to 4 pm, and admission is $7.00 for adults and $4.00 for children ages 5 through 12. For additional information call (800) 631-0062 or in New Jersey call (201) 297-2526.

October 27-29, 1986
The first annual INTERFACE INTERNATIONAL in Europe Conference and Exposition will be held at the Parc des Expositions in Paris, France. For additional information contact The Interface Group, 300 First Avenue, Needham, MA 02194; (617) 449-6600.

October 30-November 1, 1986
The ninth SOUTH FLORIDA COMPUTER & BUSINESS EQUIPMENT SHOWCASE, an expositon of small computer and business equipment users will be presented at the Miami Expo Center. Geared to business, professional and corporate users of computer systems and business equipment. For additional information contact The Interface Group, 300 First Avenue, Needham, MA 02194; (617) 449-6600.

NOVEMBER

November 1, 1986
The IBM & Clone Expo will be held at the Meadowlands Hilton Hotel, on Route 3, 4 minutes west of New York City. Over 175 vendors will sell and display personal computer products of all kinds for IBM compatible computers inlcuding hardware, software, books, supplies, accessories and parts. Show hours are 10am to 4pm. For additional information call (800) 631-0062 or in New Jersey call (201) 297-2526.

November 2, 1986
The MICRO COMPUTER FAIR will be held at the Oak Lawn Masonic Lodge, 9420 S. 52nd Avenue, Oak Lawn, Illinois. Personal, business, hobby, hardware, software, supplies, accessories. Admission $3 per person. For additional information contact Tom Zarecki (312) 839-2611.

November 8, 1986
The 4th Maryland/DC/VA Micro

continued next page

COMING SOON TO ORLANDO

GREAT SOUTHERN COMPUTER & ELECTRONICS SHOWS

OCTOBER 10, 11, & 12 **ORLANDO EXPO CENTRE** (DOWNTOWN, ACROSS FROM BOB CARR AUDITORIUM)

IF YOU SELL OR BUY COMPUTERS OR ELECTRONIC PRODUCTS FOR BUSINESS OR INDIVIDUAL USE THEN THIS SHOW IS FOR YOU!

• **Dealers, Distributors & Manufacturers**

WHO WILL EXHIBIT
- ★ Computers and Related Products
- ★ Electronic Products
- ★ Telecommunications and Communications
- ★ VIDEO Equipment and Products
- ★ Office Equipment and Products
- ★ Many More Related Products

A FEW BENEFITS OF EXHIBITING
- ★ **4TH** Great Year of the Largest Show in Florida
- ★ Every exhibitor receives a free mailing list of all attendees who register at the show
- ★ Your company can give, a seminar or product demonstration
- ★ Professional show management and promotion
- ★ Free hospitality room and meeting space available
- ★ Low exhibit rent, co-op advertising plan and more

WHO WILL ATTEND?
- ★ Individuals Like You!
- ★ General Businesses
- ★ Vertical Markets & Professionals
- ★ Educational Institutes
- ★ Government Buyers
- ★ Personal Computer Buyers and Users
- ★ Computer Industry Representatives
- ★ Fortune 1000 Companies
- ★ Florida's Top 7000 Companies and More
- ★ All Computer & Electronic Enthusiasts!

A FEW BENEFITS OF ATTENDING
- ★ See thousands of products displayed
- ★ Compare, price, learn and buy
- ★ Free magazines, gift bag and giveaways
- ★ Free seminars — a learning experience
- ★ Low admission price or get free tickets by pre-registering

SEE THESE MANUFACTURERS REPRESENTED

3-M, Amdek, Amiga, Apple, Ashton Tate, AST, AT&T, Autocad Inc., Best Power Supplies, Brother Corporation, Caere Corporation, Calcomp, C. Itoh, Chromalux, Compaq, Compsee, DEC, Diablo, Eastman Kodak, Epson, Franklin Drives, GTE, IBM, Hewlett Packard, Kaypro, Lotus, Lundy Electronics, Microsoft, Minolta, Mite Communications, NEC, Norcom, Okidata, Olympic, Opus, Panasonic, PDI, PGS, Quadram, Sanyo, Sharp, Silver-Reed, Sweet-P, TCS Software, TMC, Transtar, Triad Power Systems, TTX, Zaptrap, Zenith Data Systems

PRODUCTS TO BE DISPLAYED

—COMPUTERS—
- Hardware
- Software
- Peripherals
- Printers
- Monitors
- Accessories
- Supplies
- Environmental Control
- Power Supplies
- Timesharing
- Services
- Consulting-Services
- Desks & Furniture
- Publications
- & More

—OFFICE EQUIPMENT—
- Copy Machines
- Business Machines
- Office Supplies
- Office Service
- Telecommunications
- Office Furniture
- Publications
- & More

—ELECTRONICS—
- Video Products & Accessories
- Robotics
- Publications
- & MUCH MORE

LEARN, COMPARE – PRICE & BUY

• FREE SEMINARS • FREE MAGAZINES • FREE GIFT BAG AT DOOR • GIVEAWAYS

GREAT SOUTHERN SHOWS (904) 743-8000

P. O. BOX 655, JACKSONVILLE, FLORIDA 32201

PREREGISTRATION

(For all those who do not pre-register there will be an admission at the door of the show.)

Great Southern Computer & Electronics Show - Orlando

☐ **YES,** please hold passes at the door in my name, we will be attending.

☐ **YES,** I would like to attend a free seminar.

(PLEASE PRINT OR TYPE)

Company Name_____

Authorized Contact Name_____

Address_____

City, State, Zip_____

Telephone_____

FREE SHOW ADMISSION PASSES (number needed)_____

☐ **YES,** SEND EXHIBITOR INFORMATION WE MAY BE INTERESTED IN EXHIBITING.

FOR FREE ADMISSION PASSES REGISTER NOW

EXHIBIT SPACE STILL AVAILABLE CALL TODAY!

Coming Events
continued from page 226

Show will be held at the Sheraton Hotel Convention Center, Exit #20-B of I-95, in New Carrollton, Maryland, just a few minutes north of Washington and 30 minutes south of Baltimore. Over 250 vendors will sell and display personal computer products of all kinds for IBM, Apple, Commodore, Atari, etc. Show hours are 10am to 4pm. For additional information call (800) 631-0062 or in New Jersey call (201) 297-2526.

November 10-14, 1986
The eighth annual COMDEX/Fall, the world's largest computer industry trade show will be held at seven major Las Vegas facilities—Las Vegas Convention Center, the Convention Center's West Hall, the Las Vegas Hilton, Riviera, Sahara, Caesar's Palace, and MGM Grand hotels. For additional information contact The Interface Group, Inc., 300 First Avenue, Needham, MA 02194; (617) 449-6600.

November 20-22, 1986
The sixth LOS ANGLES COMPUTER & BUSINESS EQUIPMENT SHOWCASE, an exposition for small computer and business equipment users, will be presented at the Los Angeles Convention Center. Geared to business, professional and corporate users of computer systems and business equipment. For additional information contact The Interface Group, Inc., 300 First Avenue, Needham, MA 02194; (617) 449-6600.

November 20-22, 1986
The sixth CHICAGO COMPUTER & BUSINESS EQUIPMENT SHOWCASE, an exposition for small computer and business equipment users, will be presented at McCormick Place, Geared to business, professional and corporate users of computer systems and business equipment. For additional information contact The Interface Group, 300 First Avenue, Needham, MA 02194; (617) 449-6600.

November 23, 1986
COMPUTER CENTRAL, the multi-vendor personal computer show for everyone! New and used hardware, software, peripherals, supplies, parts, etc. This show will be held at Holiday Inn, 860 Irving Park Road, Itasca, Illinois. The show hours are from 9:30am to 4:00pm. Admission is $4. For additional information call (312) 940-7547.

November 23, 1986
The 2nd Long Island Micro Show will be held at the Colonie Hill, Exit #57 of the Long Island Expressway, in Hauppauge, NY. Over 300 vendors will sell and display personal computer products of all kinds. Show hours are 10 AM to 4 PM. There is free parking for over 1500 cars. For additional information call 800-631-0062 or in New Jersey call 201-297-2526. Sponsor of the show is Ken Gordon Productions.

November 29, 1986
The 5th South Jersey Micro Show will be held at the Betsy Ross Plaza (formerly the Halloran Plaza) on Route 130 in Pennsauken, New Jersey, just one minute from Center City Philadelphia. Over 275 vendors will and display personal computer products of all kinds. Show hours are 10 AM to 4 PM. For additional information call 800-631-0062 or in New Jersey call 201-297-2526. Sponsor of the show is Ken Gordon Productions.

DECEMBER

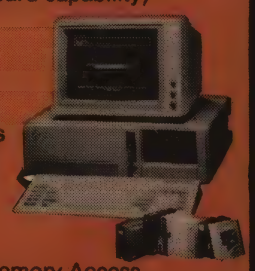
December 7, 1986
The MICRO COMPUTER FAIR will be held at the Oak Brook Hyatt, 1909 Spring Road, Oak Lawn, Illinois. Personal, business, hobby, hardware, software, supplies, accessories. Admission $3 per person. For additional information contact Tom Zarecki (312) 839-2611.

December 7, 1986
The 5th South Jersey Micro Show will be held at the Aspen Manor/Hotel on Route 46 in Parsippany, NJ, near Interstates 80, 280 and 287. Over 400 vendors will sell and display personal computer products of all kinds. Show hours are 9 AM to 4 PM. For additional information call 800-631-0062 or in New Jersey call 201-297-2526. Sponsor of the show is Ken Gordon Productions.

December 11-13, 1986
The second annual INTERFACE in Japan Conference and Exposition will be held at the Harumi Exhibition Center and Keio Plaza Hotel in Tokyo. More than 150 companies are expected to display and demonstrate computer systems and communications services for large-scale corporate, government and institutional systems users in Japan, Korea, Taiwan (R.O.C.), Singapore, Hong Kong, and the People's Republic of China. For additional information contact The Interface Group, 300 First Avenue, Needham, MA 02194; (617) 449-6600.

December 11-13, 1986
The second annual INTERFACE IN JAPAN CONFERENCE AND EXPOSITION will be held at the Harumi Exhibition Center and Keio Plaza Hotel in Tokyo, Japan. In addition to its exhibit floor, this show will also feature a Conference of more than 25 sessions led by international experts, on a variety of technical and management-oriented subjects related to data communications and office systems integration. For additional information contact the Interface Group, 300 First Avenue, Needham, MA 02194; (617) 449-6600

MX/PC an IBM PC/AT Compatible
The system is *completely factory assembled and tested.* — APPROVED LEGAL BY U.S. CUSTOMS SERVICE - APPROVED BY F.C.C.
A Personal Computer with Maximum Performance
• 80286 CPU • Operate Under MS-DOS 3.1 and Xenix System • Perform Multitasking and Multiuser on Desk Top
Power Supply — 200W
Motherboard — 512K on board (1M on Board capability)
(1) Floppy Disc Drive — 1.2M
(1) Floppy Disc/Hard Disc Controller — Controls two floppy and two hard drives
Keyboard
Package Includes: Operating System MS$_{TM}$-DOS 3.1 with advanced diagnostics MS$_{TM}$-DOS: Users Guide, Programmers Reference and Users Reference Users Manual Service Manual
Monitor Not Included
• 100% Compatibility • Zero-Wait-State Memory Access Selectable • 360KB and 1.2MB FDD Switch Selectable • Flexible H/W Configuration Arrangement • Much Lower In Price Structure
$1,495



COMPUTER CASES
Nickel plated, grounded type used in FCC Approved Systems
XT Type $49.00
AT Type $89.50

All Add-On Cards Meet FCC Testing Requirements.

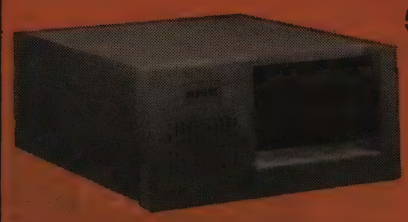
ATTAK™ 286 AT type Motherboard 8MHz $499.50
Meets FCC Testing Requirements

640K Turbo Motherboard
Hard Switchable 4.7-8MHz
Meets FCC Testing Requirements

POWER SUPPLIES
135 Watt (XT Type) $75.00
200 Watt (AT Type) $120.00
UL Listed E59477
FCC Approved BPA83SDSP5123C

KJT
KJT Corporation
4505 Ratliff Drive
Addison, Texas 75001
214/931-7181
Texas — 1-800-442-2065
VISA & MASTERCARD WELCOME
SATISFACTION GUARANTEED
OVER 17 YEARS OF ELECTRONIC EXCELLENCE
New Items Are Available Weekly
Call For All Your IBM Compatible Requirements
Higher Quality at Lower Cost!
Dealers & Distributors Inquires Welcome!
No Returns without RMA or they will be refused!
Returned merchandise may be subject to 0 to 15% restocking charge.

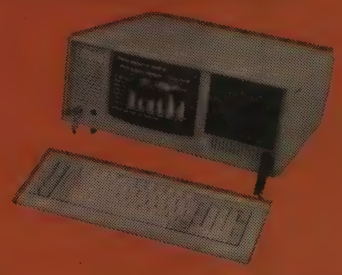
EXPANSION-MASTER CHASSIS for XT or AT.
100 WATT P.S. with fan.
5 Expansion slots
$295.00



MD-3 Color Monitor $349.00
MD-7 Color Monitor $539.00
Hi Resolution for EGA Usage
UL & FCC Approved

KEYBOARDS
5050 Type XT only $59.00
5060 Type XT, AT $84.50
5151 Type XT only $84.50
5161 Type XT, AT $89.50
FCC Approved

PORTABLE CASE Contains:



Monitor, Power Supply, Keyboard $425.00
With 640K Motherboard Video Card, Floppy Disc Card and Floppy Disc Drive $1100.00

MODEMS
1200 Internal $159.00
1200 External $159.00
2400 External $395.00
All Features FCC Approved

All Our Regular Standard Products At Our Usual Low Cost Power Supplies; Cases; Keyboards.
Call For Best Prices

TURBO-M™

NOW SHIPPING
FROM STOCK

COMPARE OUR SYSTEMS

TURBO M-PC COMPLETE SYSTEM

Dual Speed — 4.77 AND 8Mhz TURBO

FULLY IBM COMPATIBLE

SYSTEM A
FLOPPY SYSTEM
$799.95

SYSTEM 22
HARD DRIVE SYSTEM
22 MEGABYTE SYSTEM

$1,299.95

640K memory
8 slot motherboard
150 Watt Power Supply
Monochrome Hercules Compatible
Monochrome Display High Res.
Tilt and Swivel Base Monitor
Serial port (2nd port opt.)
1 360 K floppy
1 parallel port
Clock calendar
Game Port
Keyboard 5151 style
Ram spooler
Printer spooler

* A Norton Utilities style program, but even more.
™ Norton Utilities Peter Norton.

Toll Free Ordering 1-800-343-8841

Software Support Inc.

TERMS and CONDITIONS.
All prices are cash discounted. However, we do accept MC, VISA, AMEX & DISCOVER credit cards. COD's are accepted. No deposit required. Purchase Orders-Corporate, Government & School PO's are accepted. Please call for details. Shipping Costs are calculated per order. Please call for total. Shipments of all in-stock products are made within 24 hours. Same day service is available upon request — no added cost. Not responsible for typographical errors. Terms and Specifications may change without notice.

MicroSmart, Inc.

OUR NEW ADDRESS

200 Homer Avenue
Ashland, MA 01721

OUR NEW COMPANY

1-617-872-9090

Hours: Mon-Fri 10am to 5:30pm (est) Sat. 4:00pm

Toll Free Ordering 1-800-343-8841

Dealer Inquiries Invited

Reader Service-Call 1-800-343-8841 ™

Service & Returns: It is our policy to repair all service returns within 24-48 hours. Normally same day turn-around is accomplished. It is necessary to have a (R)eturn (M)aterial (A)uthorization to insure speedy service.

IBM, TAVA, COLUMBIA, 5151, COMPAQ, EAGLE, TRS/80, HEATH/ZENITH are registered trademarks of IBM Corp., Tava Corp., Columbia Computer Corp., Key Tronics Corp., Compaq Corp., Eagle Computer, Tandy Corp., and Zenith Corp., respectively.

• 1986 Software Support, Inc. *All rights reserved.*
• 1986 MicroSmart, Inc. *All rights reserved.*
• 1986 IBM Corp. *All rights reserved.*

TURBO-M™

Check Out Our Systems — High **QUALITY** ***TURBO*** motherboard at the **LOWEST** prices.
Our hard drive systems have **EXTRA** megabytes of ***FREE*** storage — ***CALL***
(more megabytes for less megabucks)
Our monitors are high resolution TTL — *They even have their own tilt and swivel base* ***FREE***
Powered by a heavy duty power supply, and offering ***TRUE*** — **8Mhz turbo speed**
ONE FULL YEAR WARRANTY

COMPARE OUR SYSTEMS — TURBO M is the COMPETITION

SYSTEM A
FLOPPY SYSTEM
$799.95!

System 22
HARD DRIVE SYSTEM
22 MEGABYTE SYSTEM
$1,299.95!

TURBO M-PC COMPLETE SYSTEM

Dual Speed — 4.77 AND 8Mhz TURBO
FULLY IBM COMPATIBLE

- *640 K memory*
- *8 slot motherboard*
- *150 Watt Power Supply*
- *Monochrome Hercules Compatible*
- *Monochrome Display High Res.*
- *Tilt and Swivel Base Monitor*
- *Serial port (2nd port opt.)*
- *1 parallel port*
- *Clock calendar*
- *Game Port*
- *Keyboard 5151 style*
- *Ram spooler*
- *Printer spooler*
- *1 360 K floppy*

Toll Free Ordering 1-800-343-8841

TURBO M/AT™—COMPLETE SYSTEMS STARTING AT $1,799.95!!!

ONE FULL YEAR WARRANTY

Comes Complete with 80286 processor
6 and 8 Mhz Switch Selectable
8 Slot Motherboard
192 Watt Power Supply
1.2 Megabyte Floppy Drive
1 Full Megabyte of Memory on Motherboard
2 Parallel Ports — 2 Serial Ports
Clock Calendar
Hercules Compatible Monochrome Card
Monochrome Display-High Resolution
Tilt and Swivel Base
AT Keyboard

ADD-IN BOARDS TO HELP YOU BUILD YOUR SYSTEM

TURBO-M Motherboad Dual Speed **$199.95**	Monochrome Graphics Card with Printer Port **$79.95**	Floppy I/O Card Controls Two Floppy Drives, Serial Port Parallel Port Clock Calendar Game Port **$99.95**	Winchester Hard Drive Controller **$134.95**	10 Megabyte and 20 Megabyte Drives Complete System Drive, Controller, Cables and easy to follow instructions. **$349.95 — $449.95**		Color Graphics Card with Printer Port **$94.95**
150 Watt Power Supply **$79.95**	Multi Function Card with Space for 384K of Memory, Serial Port, Parallel Port Clock Calendar, Game Port **$79.95**	5151 Compatible Keyboard with Separate Cursor and Number Pads **$89.95**	Monochrome Monitor with High Resolution Tilt/Swivel Base **$159.95**	Floppy Drive Card Control up to Four Drives **$39.95**	P.C.DOS 3.2 **$80.00**	Flip Top Cabinet with Speaker **$49.95**

MEGADISK™ HARD DRIVES

Our Hard Drive Systems Are Compatible With
IBM PC and AT, HEATH/ZENITH, COMPAQ, COLUMBIA, PC CLONES, TAVA, EAGLE
TRS/80 Models I / III / IV / 4D / 4P / MAX 80 / COLOR COMPUTER, Tandy 1000

Systems come complete with drive, controller, cables, hardware and easy to follow instructions.

IBM ETC
6 megabytes ..... starts at $229.95
11 megabytes ..... starts at $349.95
22 megabytes ..... starts at $449.95

Systems come complete with one free software driver for TRSDOS 6, LDOS 5.1.x, DOSPLUS 3.4/4, or NEWDOS 80.CP/M is available.

TRS/80
5 megabytes $399.95
10 megabytes $499.95
20 megabytes $699.95
20 meg plus 5 mb/removable $999.95
40 megabytes $1,299.95
5 megabyte removable $499.95

REMOVABLE MEDIA SPECIAL

5 Megabyte Cartridge Hard Drive Now
$399.95

Warranty Information: TURBO-M systems come with a full year warranty for parts and labor.
TURBO-M systems are guaranteed to run all programs such as LOTUS, SYMPHONY, AUTOCAD, FLIGHT SIMULATOR, DBASE, MICROGRAFX, WORDSTAR, LEADING EDGE W/P, RBASE.
MEGADISK hard drives are fully warranteed for parts and labor.

Software Support Inc.

TERMS and CONDITIONS.
All prices are cash discounted. However, we do accept MC, VISA, AMEX & DISCOVER credit cards. COD's are accepted. No deposit required. Purchase Orders-Corporate, Government & School PO's are accepted. Please call for details. Shipping Costs are calculated per order. Please call for total. Shipments of all in-stock products are made within 24 hours. Same day service is available upon request — no added cost. Not responsible for typographical errors. Terms and Specifications may change without notice.

MicroSmart, Inc.

OUR NEW ADDRESS:
200 Homer Avenue
Ashland, MA 01721
1-617-872-9090
Hours: Mon-Fri 10am to 5:30pm (est) Sat. 4:00pm

OUR NEW COMPANY!

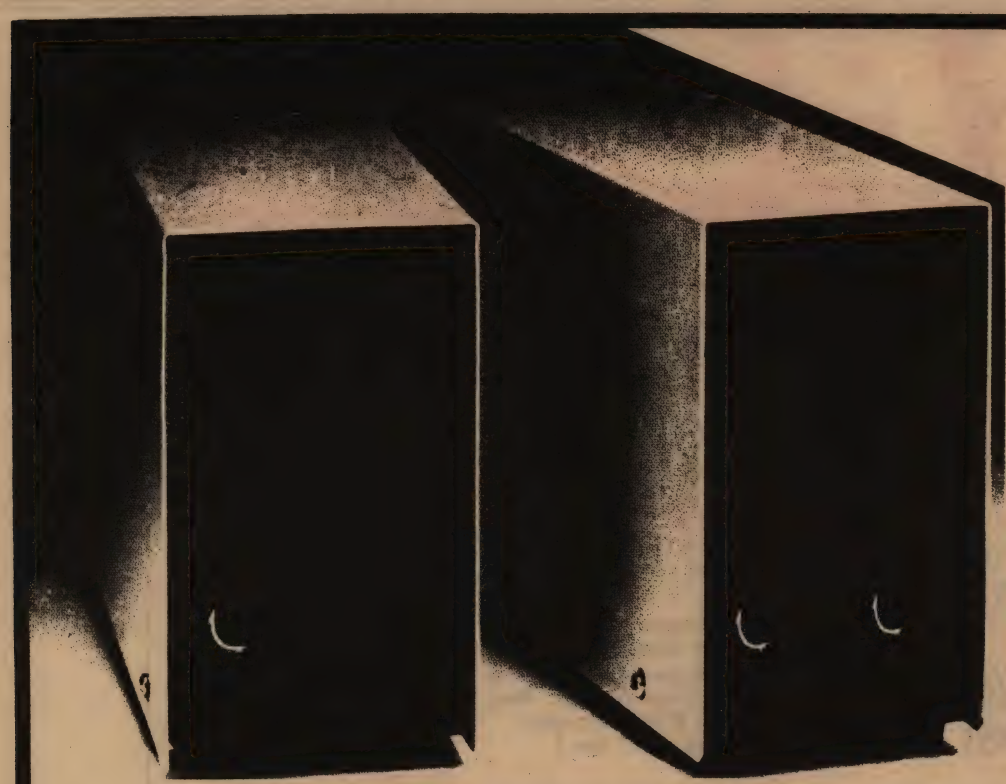
Toll Free Ordering 1-800-343-8841

Dealer Inquiries Invited
Reader Service-Call 1-800-343-8841

Service & Returns: It is our policy to repair all service returns within 24-48 hours. Normally same day turn-around is accomplished. It is necessary to have a (R)eturn (M)aterial (A)uthorization to insure speedy service.

IBM, TAVA, COLUMBIA, 5151, COMPAQ, EAGLE, TRS/80, HEATH/ZENITH are registered trademarks of IBM Corp., Tava Corp., Columbia Computer Corp., Key Tronics Corp., Compaq Corp., Eagle Computer, Tandy Corp., and Zenith Corp., respectively.

- 1986 Software Support, Inc. *All rights reserved.*
- 1986 MicroSmart, Inc. *All rights reserved.*
- TM 1986 IBM Corp. *All rights reserved.*



CASES

5¼" ENCLOSURES

SINGLE FULL SIZE AND DUAL ½ HEIGHTS

	Qty 1	Qty 3	Qty 10
Single PS and Case	$44.95	$39.95	$35.00
Dual 1/2 Ht PS and Case	$54.95	$44.95	$39.95
Filler pieces for 1/2 ht drives		$3.00	
Y cables	$3.00		
Data cables			

HARD DRIVE CASES 119.95

SPECIALS

PCjr 2nd Drive $209.95

Radio Shack Co-Co DriveO $199.95

Disk Drive w/PS&Case $129.95

Floppy Disk Drives

				Qty 1	Qty 3	Qty 10
MPI	Full ht	DS/DD	360K	69.95	59.95	49.95
Tandon	1/2 ht	DS/DD	360K	89.95	79.95	69.95
Panasonic	1/2 ht	DS/DD	360K	119.95	99.95	85.00
Epson	1/2 ht	DS/DD	360K	119.95	99.95	85.00
TEAC	1/2 ht	DS/DD	360K	119.95	99.95	89.95
Mitsubishi	1/2 ht	Quad Dens.	720K	99.95	89.95	79.95
Panasonic	1/2 ht	1.2 Meg		129.95	119.95	115.00

Hard Disk Drives

		XT Bare		XT Kits		AT Drives	
		Qty 1	Qty 3	Qty 1	Qty 3		
10 Meg	Full ht	179.95	149.95	279.95	249.95	—	
20 Meg	1/2 ht	299.95	279.95	399.95	279.95	495.95	FAST
30 Meg	1/2 ht	—	—	479.95	459.95	595.95	FAST
40 Meg	1/2 ht	Call	Call			695.95	FAST
80 Meg		—	—	—	—	1195.95	FAST

SPECIALS

Tape Backups

Irwin	429.95
Archive 20Meg	499.95
Archive 60Meg	659.95

360K Floppy

MPI Full ht 49.95 qty 10

10Meg Kit 279.95

20Meg Kit 399.95

30Meg Kit 479.95

20Meg HardCard

New Low Price

FREE

Plastic library case supplied with all diskettes

9.95

10 Diskettes

CALL US TODAY!!
ORDER TOLL FREE

800-635-0300

TRUE DATA PRODUCTS

9 South Main Street P.O. Box 347
Uxbridge, Massachusetts 01569

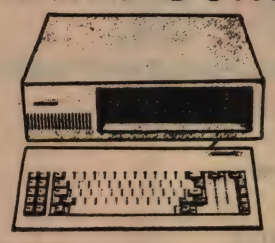
617-278-6555

HOURS MON SAT 9-6 (EST)

FCC APPROVED

I.B.M. Compatibles XT's AT's & Baby AT's

Plus Free Software



- WORD PROCESSOR
- SPREADSHEET
- DATABASE MANAGER
- GAMES
- 1 YEAR WARRANTY

Xt System

XT Case
8088 (4.77Mhz)
150 Watt PS
5150 Keyboard
1 360K Floppy
256K expandable to 640K
8 Slots

Only 469.95

AT System

AT Case
80826 (8Mhz)
200 Watt PS
640K
1.2Meg Floppy
Floppy & HD Controller

Only 1495.95

Baby AT System

AT Case
8088 Turbo
150 Watt PS
AT Style Keyboard
360K Floppy
256K expandable to 640K

Only 499.95

many cards & options to choose

EGA Monitors
NEC MULTISYNC
TATUNG
CALL

RGB COLOR
12" Made by HITACHI
Only 279.95

TTL MONITOR
Samsung
119.95

COMPOSITE MONOCHROME
SAMSUNG
79.95

MODEM
300/1200 BUAD
INTERNAL
129.95

STAR PRINTERS
GEMINI 10X 199.95
LV1200 199.95
NX10 239.95

PANASONIC PRINTERS
1091 239.95
1092 CALL
1592 CALL

EPSON PRINTERS
LX-80 CALL
FX-85 CALL
FX-286 CALL
LQ-1000 CALL

150 WATT POWER SUPPLY
85.00

IBM'S PC, XT, AT
CALL FOR QUOTE

EGA CARD
by DFI
239.95

ABOVE MEMORY CARD
2 Meg 159.95
4 Meg 199.95
2 Meg AT 169.95

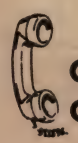
576K MEMORY CARD
49.95

DISK MULTI I/O
MULTIFUNCTION
COLOR CARD
MONO CARD
YOUR CHOICE 79.95

TURBO MOTHERBOARD
139.95

DEALERS ...CALL

800-635-0300



CALL US TODAY!!
ORDER TOLL FREE

TRUE DATA PRODUCTS

9 South Main Street P.O. Box 347
Uxbridge, Massachusetts 01569

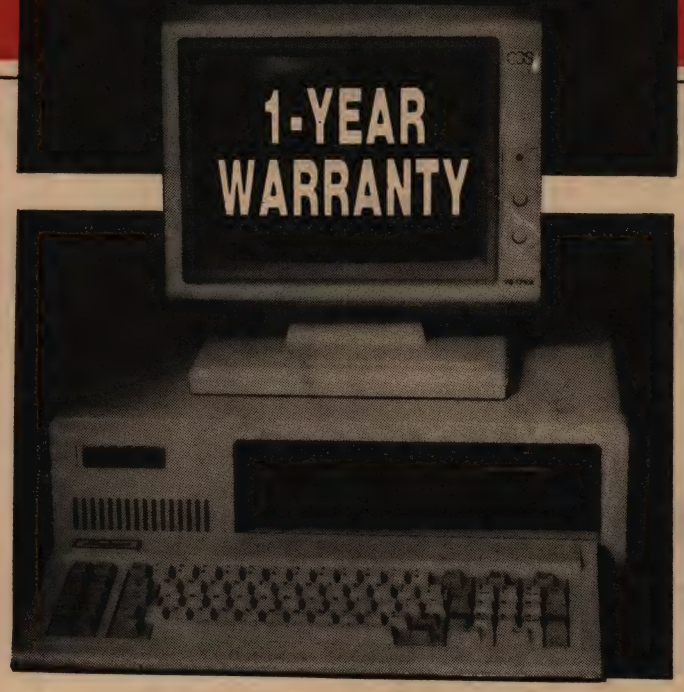
617-278-6555 617-278-6555

HOURS MON-SAT 9-6 (EST)

FREE
Plastic library case supplied with all diskettes

9.95
10 Diskettes

COMPUTECH TURBO XT



A BEAUTIFUL MACHINE AT A *Beautiful Price!*

ASSEMBLED AND TESTED IN U.S.A.

Only **$795**

You Can't Beat these features!

- IBM™ Compatible
- Dual Speed NEC V-20 4.77 & 8 MHz Processor (Keyboard Selectable)
- 300% Faster than the IBM PC/XT
- 640K RAM on Motherboard
- Powerful 150-Watt Power Supply
- 8 Expansion Slots
- Two 360K Floppy Disk Drives and Controller
- Full-Feature 5150-style Keyboard
- Mono/Color Graphic Card with Parallel Port
- Heavy-duty Metal Flip-top Case

COMPUTECH ENHANCED GRAPHICS ADAPTER (EGA) CARD

All the Features You Want...

- IBM EGA Compatible
- 256K Screen Memory
- Palette of 64 colors support
- Supports EGA, EGA/MD, CGA
- CMOS/VLSI Technology

$295

WHY SETTLE FOR LESS!

IBM and AT are registered trademarks of International Business Machines Corp.

QUALITY &

COMPUTER-AGE, INC. GIVES YOU LOW, LOW MAIL ORDER PRICES *Plus* STRONG, KNOWLEDGEABLE TECHNICAL SUPPORT!

Our Customers Include...

- FORTUNE 500 COMPANIES
- UNIVERSITIES & SCHOOLS
- FEDERAL & LOCAL GOVERNMENTS

Seagate HARD DISK KIT SALE!

THE ONLY DRIVE WORTH ASKING FOR BY NAME!

There's a reason Seagate has sold 2,500,000 hard disk drives...

RELIABILITY!

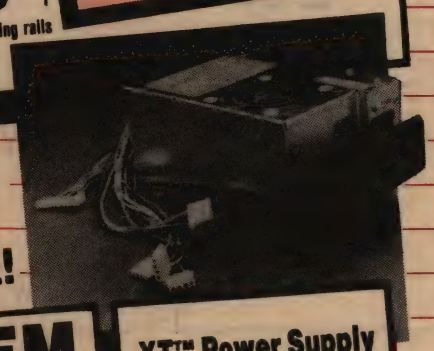
10MB HALF-HEIGHT SEAGATE ST-213 WITH CONTROLLER
Only **$369***

20MB HALF-HEIGHT SEAGATE ST-225 WITH CONTROLLER
Only **$469***

30MB HALF-HEIGHT SEAGATE ST-238 WITH CONTROLLER
Only **$529***

IRWIN 10MB TAPE BACK-UP With Cartridge
Only **$395**

*Includes hard disk, controller, cable, mounting rails and instructions. Drives are pre-tested. 1-Year Warranty.



YOUR BEST BUY IS AT COMPUTER-AGE!

DATATRONICS MODEM

100% HAYES COMPATIBLE

- 300/1200BAUD
- AUTO DIAL/AUTO ANSWER
- TONE/PULSE DIALING
- COMMUNICATION SOFTWARE

INTERNAL *Only* **$169**

EXTERNAL *Only* **$189**

XT™ Power Supply

- Directly replaces power supply in PC
- Powerful 150-Watts
- Fully XT Compatible
- 4-Drive Power Plug
- Side Switch like IBM
- One-Year Warranty

Only **$79**

SERVICE!

You Can Depend on COMPUTER-AGE for...

- COMPATIBILITY
- RELIABILITY
- TOP QUALITY
- RIGHT PRICE

COMPUTECH

MULTI-FUNCTION CARD

...for IBM-PC and Compatibles

WITH 384K INSTALLED

Only $149

Features...

- Parallel Port and Serial Port
- Clock/Calendar
- Game Port
- Print Spooler/Buffer
- RAM Disk
- Manual, Cables & Software

MONITOR *Special!*

SAMSUNG
12" AMBER, TTL
A GREAT BUY!
Only $89

MAGNAVOX
12" AMBER, TTL
Professional Hi-Resolution
Only $99

MAGNAVOX
13" RGB/COMPOSITE
GREEN SWITCHABLE
680x240, Cable
Only $299

IBM ADD-ON BOARDS

FLOPPY DISK CONTROLLER CARD
with Cable
A Great Buy!
Only $49

MONO. GRAPHIC CARD
with parallel port.
Hercules Compatible.
Runs Lotus 1-2-3, Auto Cad.
Only $89

COLOR GRAPHIC CARD
with parallel port.
Emulates IBM Graphic Card
Only $85

640K RAM EXPANSION CARD
with OK.
A Computech Special!
Only $59

I/O PLUS CARD
with parallel port, serial port, game port, clock/calendar
Only $79

MULTI I/O CARD
FDC, parallel port, serial port, game port, clock/calendar.
Only $99

HARD DISK CONTROLLER CARD
Western Digital, with Cable.
A Great Buy!
Only $125

XT METAL CASE
with Flip Top.
Heavy Duty.
Only $49

TANDON 1/2-HEIGHT DISK DRIVE
360K. Model 55B2.
Limited Quantities.
Order Early!
Only $89

RS-232 SERIAL CARD
Gives you that extra edge.
You can't beat this price!
Only $39

COMPUTECH PC AT

SPEED AND POWER
Plus Reliability

ASSEMBLED AND TESTED IN U.S.A.

Only $1695

Dependable Features include...

- Dual Speed 8028-6 6.77 & 8 MHz Processor
- with 80287 Option
- 640K RAM on Board, expandable to 1MB
- 200-Watt Power Supply
- Clock/Calendar with Battery BACK UP
- 16 Bit Hard Disk/Floppy Disk Controller
- 1.2MB Floppy Disk Drive
- AT-Type 5160 Keyboard
- Heavy-duty Metal Slide-out Case

MAKE YOUR PC/XT INTO AN AT!

VICTOR SPEEDPAC 286

- *Increases Speed up to 700%*
- *80286-8CPU with fast 7.2MHz*
- *Fits 1/2-Card Slot*
- *Easy Installation*
- *No Software Necessary*

Only $399

master charge THE INTERBANK CARD

VISA

AMERICAN EXPRESS Cards Welcome

COMPUTER-AGE INC.

55 FISHFRY STREET
HARTFORD, CT. 06120

Call Today! (203) 724-5100

TELEX: 5106008830 (COMPPR AGE UQ) FAX: (203)724-3565

- No Surcharge for Visa/MC. Add 2% for AE.
- No orders charged till shipped.
- Purchase Orders accepted on prior approval from Universities, Schools, Corporations, Federal and Local Government Agencies.
- Allow 15 days for Personal Check orders.
- C.O.D. payment by Cashier's Check Only plus $3.00.
- FREE Technical support from our Computer Experts.
- Prices Subject to change without notice.
- Not responsible for typographic errors.
- All returned merchandise subject to 10% restocking fee.

TEXAS ELECTRONIC SALES

POST OFFICE BOX #13476
ARLINGTON, TEXAS 76094-0476
(817) 274-6723

Price and availability subject to change without notice. Prices shown do not include shipping charges. VISA/MC

503 VALLEY SPRING DRIVE
ARLINGTON, TEXAS 76018
(817) 274-6723

ULTRA XT SYSTEM

"COMPLETE" $795

256K MEMORY (640K MAX), DUAL HALF HIGH DRIVES, CGA VIDEO ADAPTER, MONOCHROME MONITOR, PARALLEL PRINTER PORT, IBM LOOKALIKE CASE, XT STYLE KEYBOARD, 135 WATT POWER SUPPLY

****** BASE SYSTEM PLUS ******

MONO $995

640K, PARALLEL & SERIAL PORTS, CLOCK, HI-RES TTL MONOCHROME MONITOR, ENHANCED XT KEYBOARD

COLOR $1195

640K, PARALLEL/SERIAL PORTS, CLOCK, HI-RESOLUTION RGB MONITOR, ENHANCED XT KEYBOARD

BUSINESS $1395

640K, DUAL SPEED MOTHERBOARD CLOCK, HI-RES TTL MONOCHROME MONITOR, PARALLEL/SERIAL PORTS, SEAGATE ST225 20 MEG HARD DISK

PROFESSIONAL CAD SYSTEM

- FULLY IBM XT/AT COMPATIBLE
- FULL ONE MEGABYTE MEMORY ON MOTHERBOARD
- FLOPPY & HARD DISK CONTROLLER
- 1.2 MEG FLOPPY DISK DRIVE
- ONE 360K FLOPPY DISK DRIVE
- SEAGATE ST4038 30 MEG W/ LINEAR VOICE COIL
- 192 WATT POWER SUPPLY
- PARALLEL AND TWO SERIAL PORTS
- REAL TIME CLOCK AND CALENDAR
- INTEL 8MHZ 80286 CPU (6/8 MHZ)
- 80287 MATH CO-PROCESSOR (OPTIONAL)
- ENHANCED COLOR GRAPHICS ADAPTER
- NEC "MULTISYNC" RGB COLOR MONITOR (800 X 560)
- ENHANCED AT STYLE 5151 KEYBOARD
- MICROSOFT MOUSE SYSTEM W/ SOFTWARE
- 300/1200 BAUD INTERNAL OR EXTERNAL MODEM
- NARROW CARRIAGE DOT MATRIX PRINTER
- A B SIZE MULTI-PEN PLOTTER
- IBM DOS 3.2 OPERATING SYSTEM
- PAPER, DISKS, DISK CASE, SURGE SUPRESSOR
- ALL NECESSARY CABLES, DOCUMENTATION & MANUALS
- ASSEMBLED AND FULLY TESTED

"COMPLETE" ONLY $5995

ULTRA AT SYSTEM

"COMPLETE" $1895

FULLY IBM XT/AT COMPATIBLE, 512K RAM MEMORY (ONE MEG MAX), HARD DISK READY POWER SUPPLY (192 WATT), FLOPPY/HARD DISK CONTROLLER, PARALLEL & SERIAL PORTS, REAL TIME CLOCK & CALENDAR, INTEL 8MHZ 80286 CPU, MONOCHROME GRAPHIC BOARD, HIGH RESOLUTION TTL MONO MONITOR, ENHANCED XT/AT STYLE KEYBOARD

DELUXE ULTRA - AT

"COMPLETE" $2495

ULTRA AT WITH ADDITIONAL 512K RAM (1 MEG TOTAL), ONE 360K DS/DD FLOPPY, 20 MEGABYTE SEAGATE ST225 HARD DISK DRIVE

• PLEASE CALL FOR OTHER •
• SYSTEM CONFIGUATIONS •

FREE FREE FREE * MODEM OR PRINTER WITH EVERY SYSTEM *** FREE FREE FREE**

SALE SALE SALE *** 10 PERCENT OFF ALL ITEMS IN STOCK *** SALE SALE SALE

CHIPS

NEC V-20	24
NEC V-30	26
8087 Math Coprocessor	119
8087-2 Math Coprocessor	149
80287	CALL
Eprom 2764	4
4164K Ram (Set of 9)	10
256K Ram (Set of 9)	30

EPROM WRITER BOARDS

Single Burner	119
4 Gang Burner	179

EXTRAS

Printer Cable 6 foot	9
Printer Cable 10 foot	12
Keyboard Extension	9
Box 10 Floppy Disks DSDD	12
Locking Disk File	8
Computer Speaker	3
Power Outlet Strip	12
Surge Suppressor	18
IBM Dos 3.1	79
Electrical Plug Adapters	9

VIDEO BOARDS

Monochrome/Graphics/Printer	89
Monochrome/Printer Card	84
Color Graphics Card	85
Color Graphics/Printer	89

••• Call For Items Not Listed •••

MOTHERBOARDS

640K XT Type (with OK)	169
640K XT Type (with 640K)	249
XT Dual Speed (with OK)	189
XT Dual Speed (with 640K)	269

KEYBOARDS

Standard PC / XT Keyboard	69
Enhanced XT Keyboard	85
Keytronics 5151 Lookalike	99

MODEMS

Everex Internal Modem	169
External Modem 1200 Baud	179
2400 Baud Modem	CALL

DOT MATRIX PRINTERS

Dot Matrix 80 Column	229
Canon A-40	299
Canon A-50	399
Canon A-55	549

DAISY WHEEL PRINTERS

Brother HR-10	289
Brother HR-15	419
Brother HR-25	549

IBM COMPATIBLE BOARDS

Floppy Disk Controller	39
AST Six Pack Compatible	119
384K Multifunction	175
Multi IO Par, Ser, Clock	109
Multi IO w/ Floppy Controller	129
Ram Expansion	59
Microsoft Mouse	169
Mouse Systems Mouse	179

CASES

Flip-TOP Side Swith	49
Slide-On Side Switch	49

DISK DRIVES

5 1/4" 360K Floppy	85
360K Direct Drive Floppy	99
Seagate 20 Meg with cont.	439
20 Meg AT Drive (40ms)	555
Larger Capacity Drives	CALL

MONITORS

Amber or Green Composite	89
Xtron Monochrome	99
RGB Color Monitor	329
High REsolution RGB	429
NEC Multisync Color (NEW)	629

••• Call For Current Price List! •••

QUANTITY DISCOUNTS AVAILABLE
DEALER INQUIRIES INVITED

COMPUTER PARTS GALORE

56 HARVESTER AVENUE, BATAVIA, NY 14020

1-800-431-9008

NEW YORK RESIDENTS (716) 343-6133

TERMS: Minimum order is $10. For orders less than $60, add $5 shipping & handling for UPS Ground delivery or $10 for UPS 2nd day air. Orders over $60, add 5% for shipping & handling for UPS ground. 10% for 2nd day air. COD orders add $2.50 to above fees. New York residents add proper sales tax. COD payment must be cash, certified check or money order. Phone and mail orders can pay by Visa, MasterCard, Amex.. or COD. We accept personal checks with mail orders, but allow two extra weeks for processing.

DUST COVER

$9.95

A high quality translucent vinyl cover large enough to cover your XT computer, keyboard, and monitor. What would you rather have??, dust on a $10.00 cover, which you can easily remove, or on the $2000.00 system where it can wear down your drive heads etc.....ONLY $9.95

SWIVEL BASE

SMALL 12" $11.95

LARGE 14" $12.95

How nice it is to be able to turn the monitor from right to left and up and down on an easy to use swivelling stand that adds only 2" in height to the overall system. A very handy accessory, an ideal gift.....

SWITCHING POWER SUPPLY

$18.95

Another great deal from PARTS GALORE A small switching power supply that has +5v-4A, +12v-1A,-12v-1A,-5v-1A. All at the same time These cost Northern Telecom over $50.00 when they bought 10,000 of em. We got em when a subcontractor went belly up for 10% of what they paid and we are selling them for only..... .....$18.95

IBM COMPATIBLE BARE PC BOARDS

All these bare PCB come with a parts list, placement diagram showing where they go. We do not have circuit diagrams unless indicated. The EPROMS and PROMS are for sale as is certain non-infringing software for use with the boards.

HEXPACK A workalike copy of the famous AST SIX-PACK, WITH UP TO 384K RAM, Clock, Calendar and Serial and Parallel ports. 100% IBM and AST compatible, complete with schematic, parts placement and assembly data.....$24.95
Optional complete manual and software diskette.....

MONTE CARLO One of the best multifunction cards we have ever seen. This one takes either 64K or 256K RAMS in any combination for up to 1 Mbyte on board. (640K DOS accessble, balance subroutine accessed) PLUS two game ports, Clock, Calendar and Serial and Parallel ports. Clearly an awe inspiring array of functionality on a single card. Complete with schematic, parts list and placement diagram.....$34.95
Optional complete manual and diskette.....

COLOR GRAPHICS A workalike copy of the popular PERSYST color graphics card. 100% true to original and 100% compatible to IBM std. With assembly data.....$24.95

384K RAM only in close array, 384K of 64K RAM ideal for economy enhancement of system capacity. With all assembly data.....$16.95

512K Another very economical expansion card. Takes 64K RAM in close array. With all assembly data. $16.95

KRAM CARD We took a 512K card and rewired it for 256K RAMS. It now has four times the memory or 2 MBYTES. It closely follows the function of the popular JRAM card as all this type do, and also shares partition ing parameters to the extent that it will run the JRAM software or other similar programs. RAM Disc Drives are very easy to delineate. With all assembly data...$34.95

PROTOTYPE 100% WW holes with DB-25 and DB-9 footprint on end.....$24.95

PROTOTYPE+RAM This unique card has a memory array at one end. 36 16 pin sockets are placed in copper on board with all bussing in common, but with CAS, RAS etc brought out row by row and column by column so that either 64K or 256K RAMS can be quickly wired in. A 0.1 bypass cap is on each IC as well. The remaining ¾ of the board is 100% WW holes with a DB-25 and DB-9 footprint on one end.....$24.95

EXTENDER When you need to service a card with power on it is very hard to get at the board to trace signals etc so we made this little gem that lifts the whole thing up by about 6" for easy access.....$19.95

RS232, A ¼ size card with two serial ports on board. $9.95

PARALLEL PRINTER A ¼ size card with a complete IBM std centronics printer porton board, with all data.....9.95

GAME CARD A ¼ sized card with two game ports. 9.95

DISC + PRINTER Runs a parallel centronics printer and 1-4 drives. With all data.$14.95

MONO GRAPHICS A workalike copy of the very nice HERCULES mono card, with static RAM on board. With all assembly data.....$24.95

DISC CONTROL A ¼size card for the short slot and portable use. 100% compatible, 1-4 drives complete with assembly data.....$12.95

DISC CONTROL A ½sized card for regular slot that is 100% compatible, runs 1-4 drives.....9.95

DE-TERMINATOR

This is a unique board for cleaning up data line noise in the clones. This noise is caused by the 2 layer boards that most clones use. IBM uses a 4 layer board with much better noise suppression. Each data line is held 2.7 volts with an R-R network that stops all + or- spikes from causing those crashes that often bother the clones. Especially helpful for use with TURBO motherboards or TURBO plug in boards.

FOR ANY SLOT
DE-TERMINATOR BARE PCB..$18.95
DE-TERMINATOR, WIRED.....$29.95

NEC 8087

As you know NEC has been hard at work making a work-a-like copy of the 8087 math co-processor chip. Rumor has it that it will have enhanced capabilities over the 8087 in the same way the V-20 is enhanced over the 8088. We are getting some in in June and can sell them for only $119.00 each for the 5 Mhz version. Further data available in June as well as data sheets. Orders are on a first come first served basis. NO COD's

NEC 8087.....$119.00

PANASONIC JU455-5

FCC OK

The new PANASONIC JU455-5, with surface mount technology for near infinite solid state lifetime. SHUGART had all it's drives made by Panasonic after it closed it's US factory so you know they are very good.

$109.00ea 2 FOR $199.00

THE "LAZY BOARD"

640K 4.77Mhz NO ICs $59.95
640K 8 Mhz Turbo NO ICs $74.95

A board that we have fully stuffed and wave soldered so you just add the IC's and go. You save all the solder time. Buy one now!!!!.

FCC OK

640K 8 Mhz Turbo OK $129.95

FULLY WIRED AND TESTED WITH BIOS

- 64K/128K EPROMS JUMPER SELECTABLE
- WILL RUN ANY COMPATIBLE BASIC
- IBM POWER PLUG COMPATIBLE
- SAME PCB SIZE AS IBM XT
- 8088 16 BIT MICROPROCESSOR
- 8087 MATH PROCESSOR. OPTIONAL
- 8 IBM COMPATIBLE EXPANSION SLOTS
- 4 DMA AND TIMER CHANNELS

WE'VE GOT THE NEW QUMETRACK 142 DRIVES

$79.95

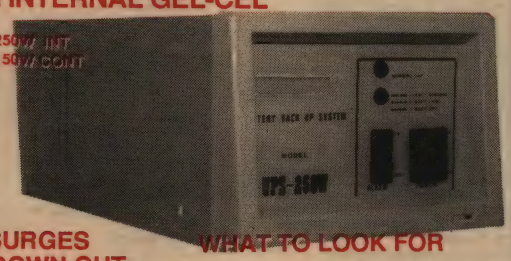
FCC OK

- Double Sided Double Density
- ½ Height • 48 TPI
- New Quiet Operation
- IBM Compatible
- New Front Panel Design

REAL IBM DRIVES

UPS-250W UNINTERRUPTIBLE POWER SUPPLY WITH INTERNAL GEL-CEL

What is the most annoying thing you can have happen while you are using your XT, MAC or other computer?? You guessed it, a power failure or sharp line transient that causes total loss ofcurrent work-file data in RAM, and that can also cause hard drive head crash, ruining the data or even ruining the drive. A UPS is the answer to this problem. The letters stand for Uninterruptible Power Supply, and refer to a power supply with a built in Battery that constantly monitors the AC line and when it sees a drop in the 120 volt line it starts to run the computer from the battery, synthesizing the 120V 60 cycle sine wave and running your whole system for you. This allows you to quickly back-up your files, and shut down your system in the proper sequence. You can even keep going as if nothing had happened and as long as the line power came back within a reasonable time you would not have any loss at all of operating time or data.



NO SURGES
NO BROWN OUT
CUTS OUT LINE NOISE

$289.95

WHAT TO LOOK FOR

1. High efficiency	85%
2. Sinewave(avoid modified square wave)	Sinewave
3. Internal no-spill battery	Yes
4. External battery terminals	Yes
5. Audible power loss warning	Yes
6. Fast transfer time, under 5 Ms	Yes
7. Multiple output sockets	2
8. % of line transients filtered	100%

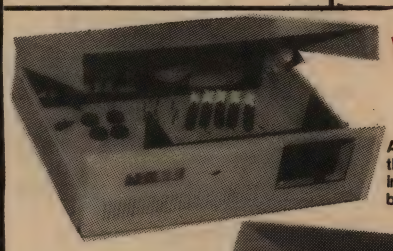
PORTABLE 120V SOURCE FOR CAR/BOAT USE

Just run from the 12VDC vehicle plug and you can have 150 Watts of 110V AC for running any item(250W intermittent)

WE HAVE A GREAT DEAL FOR HOBBY GROUPS BUY 10 AND GET ONE FREE, YES FREE, NO $$.

Yes an automatic discount for anyone who wants to buy in small volumes. Wholesale discounts can be arranged, please call with your needs.

WITH AT ASPECT $59.95



A nice case that looks like the AT but is cut for the XT in both height and width. Fits backswitch power supplies.

IBM CASE $49.95

HEAVY STEEL

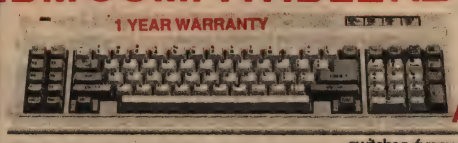
SWITCH BOX

These switch boxes are high quality, with fully switched wiring, not the cheap type that only switches the enable line. They come in both serial and parallel styles with a fan out of 2 or 4. The push button selector allows for easy one hand use.

SER/2 $39.95 PAR/2 $39.95
SER/4 $44.95 PAR/4 $44.95

IBM COMPATIBLE KEYBOARD 5160

1 YEAR WARRANTY



ALL FCC OK

The keyboard is one of the two parts of any system that are full of moving parts, and are heir to mechanical failure. So you should take care before you pay your $$$ for what may be a piece of junk. What does it matter if you save $10.00 and get 1000 hours of aggravation over the next few months(if it works that long) with rubbery switches, funny clicking noises, painted plastic that rubs off, and so on. Here at Parts Galore we buy with care, so that we do not sell any junk, because we do give a warranty, and we have been in the mail order business for 7 years. Can all the newcomers in mail order say that?? Can you trust them??

5150 The Std XT type, with large Return key, all features built in micro.....$54.95

5160 The Std AT/XT autoswitch type, with LED status panel, and large return key,all features and built in micro.....$64.95

5151 The enhanced XT type number and cursor pad, large return key, all features and has built in micro.....$74.95

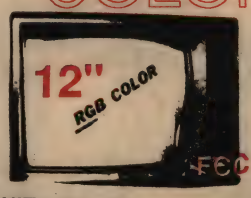
5161 The enhanced AT/XT type, with numeric and cursor pads, LED status panel, autoswitch, large return key, all features, and built in micro.....$88.95

CABLES CABLES

8 FEET,10 FEET, 20 FEET

PARALLEL, Std IBM printer cable, 25-36 pin, double shielded.8'..$8.95,10'..$9.95
SERIAL, Std IBM serialcable, 25-25 pin double shielded.8'....$8.95, 10'....$9.95
EXTENDER, 36 pin male to female Centronics for fan out boxes or extensions etc. 8'....$10.95, 10'....$12.95, 20'....$19.95

COLOR MONITOR HITACHI



FCC OK

$249.00

HITACHI, The most famous name in color monitors, made these for a famous OEM and we got em cheap as the market went soft this summer. They are RGB, Medium resolution with full 240x600 dots for full IBM graphics capability. Far better than the 240x400 low res monitors that will not show full IBM details.

240 X 600

QUADRAM COLOR 1

FCC OK

YES the famous QUADRAM COLOR 1 IBM compatible color graphics card is now for sale here for $89.00. Do not confuse this card with the Taiwan clones that are everywhere for $69.95. This is the real American design with it's long term reliability and performance.

$89.95

	ATARI		
109	JUNO FIRST	DATASOFT	5.95
110	TURTLE TRACKS	SCHOLASTIC WIZWARE	5.95
111	HACKER(ST)	ACTIVISION	19.95
112	DEMON ATTACK	IMAGIC	5.95
113	CODE BREAKER	ATARI	5.95
114	POLE POSITION	ATARI	5.95
115	FILE MANAGER 800	SYNAPSE	5.95
116	3D SUPERGRAPHICS	USA	5.95
117	SPACE CAVERN	APOLLO	5.95
118	WORD ZAPPER	VIDTEC	5.95
119	FACEMAKER(COLECO)	SPINNAKER	5.95
220	READING COMPRESHENSION	AMERICAN ED. CO	6.95
221	LEARN ABOUT WORDS	AMERICAN ED. CO	6.95
222	MAGIC SPELLS	LEARNING CO	6.95
223	DEADLINE	INTERLOGIC	6.95
224	WARLORDS	ATARI	6.95
225	CANYON CLIMBER	DATASOFT	6.95
226	MOUSE STAMPEDE(ST)	UNICORN	6.95
227	HOUSE OF USHER	CRYSTAL	6.95
228	NEW ATLANTIS	IMAGIC	6.95
229	TYPO ATTACK	ATARI	5.95
230	PC/INTER COMM(ST)	UNICORN	24.95
231	ERNIES MAGIC SHAPES	CDS	5.95
232	AXIS ASSASSIN	ELECTRONIC ARTS	5.95
233	ALPHABET ZOO	ATARI	5.95
234	POPEYE	ARCADE	5.95
235	THE LIGHT AND THE DARK	ELECTRONIC ARTS	5.95
236	TOUCH TYPING	ATARI	5.95
237	COMPLETE PERSONAL ACCOUNTANT	FUTUREHOUSE	5.95
238	RACING DESTRUCTION SET	ELECTRONIC ARTS	5.95
339	KIDS ON KEYS	SPINNAKER	5.95
340	BOUNTY BOB STRIKES BACK	BIG FIVE SOFTWARE	5.95
341	MAPS & LEGENDS(ST)	ATARI RESOURCE	5.95
342	BEAM RIDER	ATARI	5.95
343	JUMPMAN	EPYX	5.95
344	ADVANTAGE	COLECO	5.95
345	HIPPO'S QUOTES AND JOKES(ST)	HIPPOPOTAMUS	12.95
346	ANTIC	ATARI RESOURCE	6.95
347	dBMAN(ST)	VERSASOFT	24.95
	COMMODORE		
449	KEYBOARD CADET(AMIGA)	MINDSCAPE	12.95
450	A+ SPELLING	AMERICAN ED. CO	12.95
451	FROGGER	ARCADE	13.95
452	MURDER BY THE DOZEN	CBS	13.95
453	THE HOBBIT	ADDISON WESLEY	13.95
454	ASSEMBLY LANGUAGE	HAYDEN	13.95
455	HARDBALL	ACCOLADE	13.95
456	BUSINESS SYSTEMS	TIMEWORKS	13.95
457	INDIANA JONES	MINDSCAPE	13.95
458	DEADLINE	INTERLOGIC	13.95
459	ROCKY'S BOOTS	LEARING CO	13.95
460	THE WITNESS	INFOCOM	13.95
461	PROGRAMMERS BASIC TOOLKIT	EPYX	13.95
462	FIREBIRD FRANKIE	FIREBIRD	13.95
463	LODE RUNNER	BRODERBUND	13.95
464	BUBBLE GAMES(MATH)	LEARNING CO.	13.95
465	LODE RUNNER RESCUE	SYNAPSE	13.95
466	ULTIMA II	SIERRA	13.95
467	MASTERTYPE	SCARBOROUGH	13.95
468	WORMS	ELECTRONIC ARTS	13.95
469	FINANCIAL ADVISOR	COMMODARE	13.95
470	CHESS	ODESTA	13.95
471	POPEYE	ARCADE	13.95
572	KIKSTART	MASTERONIC	13.95
573	GAMEMAKER	ACTIVISION	13.95
574	PERSONAL FINANCE	SYLVIA PORTER	13.95
575	FACEMAKER	SPINNAKER	13.95
576	AEROBICS	SPINNAKER	13.95
577	DI SECTOR	STARPOINT SOFTWARE	14.95
578	AED PROGRAM EDITOR(AMIGA)	ASH II	13.95
579	Q-BOPPER	ACCELERATED SOFTWARE	13.95
580	MINDSHADOW(AMIGA)	ACTIVISION	13.95
581	AGENT USA	SCHOLASTIC	13.95
582	ZAXXON	SEGA	13.95
	APPLE		
684	WIZARDRY(SECOND)	BIR-TECH	14.95
685	DOLLARS & SENSE(MAC)	MONOGRAM	23.95
686	TURBO PASCAL(CP/MBO)	BORLAND	25.95
687	ACE 2000 REF. MANUAL(W/DISK)	FRANKLIN	9.95
688	TRIGONOMETRY	WEPCO	14.95
689	KARATEKA	BRODERBUND	14.94
690	TURBO TUTOR	BORLAND	25.95
691	SUPER TEXT	MUSE	21.95
692	COMPUTER BASEBALL	SSI	17.95
693	CLASSMATE	DAVIDSON	14.95
694	SKY FOX	ELECTRONIC ARTS	13.95
695	DOT MATRIX PTR. REF. CARD	APPLE	8.95
696	SECURITY KIT FOR MAC	APPLE	13.95
697	TURBO TUTOR(CP/MBO)	BORLAND	25.95
698	THE JAR GAME	EDUFUN	11.95
699	BACK TO BASICS(MAC)	PEACHTREE	49.95
6100	TURBO TOOLBOX(CP/MBO)	BORLAND	25.95
6101	TURBO PASCAL(3.0)	BORLAND	25.95
6102	NUMBER STUMPER	LEARNING CO	19.95
7103	BUMBLE GAMES(MATH)	LEARNING CO	14.95
7104	STICKY BEAR ABC	WEEKLY READER	17.95
7105	SENSIBLE SPELLER	SENSIBLE SOFTWARE	14.95
7106	MAXIGOLF	ADVENTURE INTERNA.	14.95
7107	CLICKART(MAC)	T/MAKER GRAPHICS	24.95
7108	MEGAFINDER	MEGAHAUS	49.95
7109	APPLEII SYSTEM UTILITIES	APPLE	12.95
7110	STICK BEAR SPELL GRABBER	WEEKLY READER	17.95
7111	FILE & REPORT	SPINNAKER	29.95
7112	STARCROSS	INFOCOM	18.95
7113	PFS:SCHOOL RECORD KEEPER	SOFTWARE PUBLISH. CO	49.95
7114	BANZAI	ADVENTURE INTERNA.	14.95
7115	CRYPTO CUBE	DESIGNWARE	13.95
7116	ADDITION MAGIC	LEARNING CO	14.95
7117	STICKY BEAR MATH	WEEKLY READER	17.95
7118	JUGGLES RAINBOW(READING)	LEARNING CO	14.95
7119	CHOPLIFTER	BRODERBUND	14.95
7120	MATIS	MA SOFTWARE	19.95
7121	LODE RUNNER	BRODERBUND	14.95
7122	GRAPHICS DEPARTMENT	SENSIBLE SOFTWARE	45.95
7123	PFS:REPORT	SOFTWARE PUBLISH. CO	29.95
8124	DOLLARS & SENSE	MONOGRAM	45.95
8125	SHERLOCK HOLMES ANOTHER BOW	BANTAM	10.95
8126	TK SOLVER(MAC)	SOFTWARE ARTS INC.	14.95
8127	MUSIC MAKER	SUBLOGIC	13.95
8128	COLOR PRINT(MAC)	I/O DESIGN	21.95
8129	MICROZINE	SCHOLASTIC	14.95
8130	ALPHABET ZOO	SPINNAKER	14.95
8131	MACLION DEMO	MAC LION	6.95
8132	APPLE/IMAGEWRITER CABLE	APPLE	5.95
8133	MICROBE	SYNERGISTIC SOFTWARE	9.95
8134	IMAGEWRITER II (OWNER MAN.)	APPLE	5.95
9135	THE SALES EDGE	HUMAN EDGE	39.95
9136	WORDSTAR(M.O.)	FRANKLIN	21.95
9137	APPLE WRITER(2.0)	APPLE	59.95
9138	SUPER KRAM	USA	18.95
9139	ACE 1200 USER MAN.	FRANKLIN	9.95
9140	MULTIPLAN	MICROSOFT	49.95
1000	McFORTH DEALER KIT	CREATIVE SOLUTIONS	39.95
1100	McDRAW	APPLE	59.95
1101	McFORTH DEALER KIT	CREATIVE SOLUTIONS	39.95
1200	PSYGNOSIS(MAC)	MINDSCAPE	29.95
1201	BUG BATTLE	USA	9.95
1202	MacMANAGER(MAC)	HARVARD ASSOCIATES	39.95
1203	APPLE PANIC	BRODERBUND	9.95
1204	RIGHT ON PRORAMS	RIGHT ON PROGRAMS	9.95
1205	BERMUDA RACE	SAMS	12.95
1206	MULTIPOLY	RESTON	12.95
1207	MATHFINDER	ELECTRONIC ARTS	14.95

	IBM		
1300	IN-A-VISION	MICROGRAFX	49.95
1301	FLIGHT SIMULATOR	MICROSOFT	24.95
1302	THE MIST	MINDSCAPE	19.95
1303	dBASE III PLUS SAMPLER	ASHTON TATE	5.95
1304	THE AUDITOR		49.95
1305	ART GALLERY I	UNISON WORLD	19.95
1306	PC FOCUS(M.O.)	INFORMATION BUILDERS	49.95
1307	PARADOX (D.O)	ANSA	49.95
1308	MULTIPLICATION TABLE	IBM	12.95
1309	TURTLE POWER	IBM	19.95
1310	R-BASE 5000	MICRORIM	299.95
1311	DIRECT COST MANAGEMENT	CURTIN MATHESON	9.95
1312	AMERICAN HISTORY	ACADEMIC HALLMARK	12.95
1313	SUPERCALC 3(2.0)	ZENITH	49.95
1314	C: A PROGRAMMING WORKSHOP	CHARLES PINE	29.95
1315	TURDO PASCAL(3.0)	BORLAND	29.95
1316	SUPERKEY	BORLAND	29.95
1317	LANGUAGE SKILLS	IBM	19.95
1318	WORD PERFECT (4.1, M.O.)	SATELLITE SOFTWARE	31.95
1400	SYMPHONY	LOTUS	249.95
1401	RETAIL TOOLKIT	NCR	9.95
1402	NEC MS DOS USER'S GUIDE AND MACRO ASSEMDLER		49.95
1403	EDUCALC	GROLIER ELECTRONIC	16.95
1404	3278/79 EMULATION	IBM	49.95
1405	REAL ESTATE INVEST SPREADSH.	BNA SOFTWARE	39.95
1406	PC EM-U-PRINT	KOCH INDUSTRIES	14.95
1407	INCOME TAX SPREADSHEET	BNA SOFTWARE	39.95
1408	MULTIMATE ADVANTAGE(3.6)	ASHTON TATE	219.95
1409	MICROSOFT WINDOW	MICROSOFT	46.95
1500	PC CONVERTIBLE GUIDE TO OPER.	IBM	9.95
1501	SYSTEM MANAGER	JEWEL	19.95
1502	MEMORY SHIFT	NORTH AMERICAN BUS.	24.95
1503	THESE UNITED STATES	IBM	9.95
1504	MASTERTYPE	SCARBOROUGH	15.95
1505	FACEMAKER	SPINNAKER	19.95
1506	MICROSOFT WORD(M.O.)	MICROSOFT	24.95
1507	EZ-VU RUNTIME FACILITY	IBM	21.95
1508	IBM PC COLOR PAINT	IBM	19.95
1509	PC DIAL	JIM BUTTON	19.95
1510	MICROSOFT WORD	MICROSOFT	94.95
1511	METAFILE(ABRIDGED VERSION)	INFORMATION MGT. SYS.	4.95
1512	PRIVATE TUTOR	IBM	19.95
1513	WORD WIZARD	BORLAND	29.95
1600	OPERATION GUIDE TO DOS 2.11	SPERRY	24.95
1601	GWBASIC MANUAL	SPERRY	24.95
1602	3101 EMULATION PROGRAM	IBM	39.95
1603	GUIDE TO DOS 2.11	SPERRY	24.95
1604	USING THE IBM PC DOS	SRA	24.95
1605	LEADING EFFECTIVELY	THOUGHTWARE	99.95
1606	OPERATING GUIDE	SPERRY	24.95
1607	PIECE OF CAKE MATH	SPRINGBOARD	15.95
1608	DATA BASE MANAGER II	ALPHA	69.95
1609	VOLKSWRITER DELUXE	LIFETREE SOFTWARE	83.95
1610	INTEGERS EQUATIONS I & II	HARTLEY	21.95
1700	MULTIPLAN(FORTUNE)	FORTUNE	39.95
1701	MS DOS 2.05	DIGITAL	24.95
1702	PLINK	PHOENIX SOFTWARE	44.95
1703	WORD (FORTUNE)	FORTUNE	89.95
1704	SALES INVOICING	MICA	69.95
1705	WESTERN CIVILIZATION	FOCUS MEDIA	12.95
1706	SIDEWAYS	FUNK SOFTWARE	26.95
1707	GRAPHIX TOOLBOX	BORLAND	29.95
1708	MERGE	LEADING EDGE	39.95
1709	FORTUNE WORD (M.O.)	FORTUNE	16.95
1710	IRA/CD ANALYSIS SYSTEM	EXECUTEC	39.95
1711	REPORT GENERATOR	EXECUTEC	39.95
1712	STATPRO(DEMO)	WADSWORTH PROF. SOFT.	6.95
1713	Z-100 OPERATIONS MANUAL	ZENITH	12.95
1714	WORDSTAR 2000+ DCA/RAM	MICROPRO	49.95
1715	FIXED ASSETS ACCOUNTING SYS	EXECUTEC	39.95
1800	THE TYPEWRITER	CHANNELMARK	19.95
1801	ACCESS PACK	PEACHTREE	21.95
1802	DATAFLEX(M.O.)	DATA ACCESS	9.95
1803	POLYMAKE	POLYTRON	14.95
1804	WORD WIZARD	BORLAND	39.95
1805	THE ACCOUNTING PARTNER	STAR SOFTWARE	75.95
1806	DECISION MANAGER	PEACHTREE	42.95
1807	HYPERION	MULTIPLAN GUIDE	21.95
1808	CONCENTRIC INFO. PROCESS.	CONCENTRIC DATA	89.95
1900	PFS:GRAPH	SOFTWARE PUB. CORP	24.95
1901	SENSIBLE SOLUTION	O'HANLON	123.95
1902	PFS:FILE	SOFTWARE PUB. CORP	24.95
	WANG		
2000	PC FOCUS(WANG)	INFORMATION BUILDERS	149.95
2001	DEADLINE(DEC RAINBOW)	INFOCOM	19.95
	BOOKS		
1	AMIGA ABASIC	COMMODORE	6.95
2	GEM PROGRAMMER REF. (ST)	ABACUS	6.95
3	INFO. RESOURSE FOR END-USERS	QED INFORMATION	9.95
4	MULTIPLAN MADE EASY	ETTLIN	7.95
5	SYSTEMS FLOW CHARTING	CVE	9.95
6	USER GUIDE TO UNIX	THOMAS/YATES	9.95
7	YOUR COMMODORE 64	HEILBORN/TALBOTT	6.95

IF YOU ARE NOT ON OUR MAILING LIST THEN YOU ARE MISSING OUT ON OUR SUPER DISCOUNT MAILLERS.

PEACHTREE QUALITY SALVAGE ADVANCE NOTICE LIST FOR ADVANCE COPIES OF OUR BID LIST AND SPECIAL NOTIFICATION OF OUR SPECIAL CLEAR OUTS FILL OUT THIS COUPON AND MAIL TO US TODAY.

NAME:_____

ADDRESS:_____

CITY:_____ STATE:_____

ZIP:_____ TYPE OF COMP:__

Thanks For your Support!

PEACHTREE • QUALITY SALVAGE •

Make Me An Offer

If You Don't Bid you Can't Win!

IMMEDIATE SHIPMENT AT ADVERTISED PRICE

ALL ITEMS WILL BE SOLD NO MATTER WHAT THE PRICE BY THE 30TH OF THIS MONTH AT THE ADVERTISE PRICE OR TO THE HIGHEST BIDDER

ALL SUCCESSFUL BIDERS WILL BE NOTIFIED WITHIN 10 DAYS AFTER CLOSE OF BIDS

SEND ALL BIDS IN WRITING TO:

PEACHTREE QUALITY SALVAGE
2532 ATLANTA RD.
SMYRNA GA. 30080

FOR FURTHER INFORMATION PLEASE CALL:
(404)-434-1888

PEACHTREE • QUALITY SALVAGE •

NEW 10 MHz

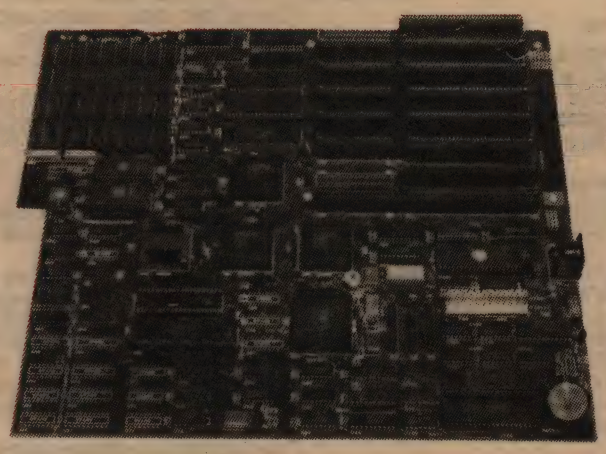
TIME IS MONEY. . . 10 MHz IS FAST!!!

FULL IBM PC-AT COMPATIBILITY*

IF YOU ARE TIRED OF WAITING FOR A 'SOMEDAY' PRODUCT OR YOU DON'T WANT TO BUY YESTERDAY'S TECHNOLOGY, THEN TREAT YOURSELF TO THE PERFORMANCE AND FEATURES OF THE "Westech 286 TURBO™" 10 MHz

PHOENIX BIOS - THE MISSING LINK IN SOFTWARE COMPATIBILITY - ON BOARD
LOWEST COST 10 MHz AVAILABLE
COMPLETELY DESIGNED, MANUFACTURED, ASSEMBLED AND TESTED IN U.S.A.

8 I/O Slots
Parallel Port
Up to 2 RS-232 Ports
1 RS-232 Included
Phoenix BIOS
Up to 1 MB Onboard
512K Included 120ns
4 Layer Mother Board
Onboard Battery
CMOS Clock Calendar
Standard Power Connector
Low Power Circuitry
10 MHz 80286
Socket for 80287
One-Year Warranty



BOARD SIZE 12 x 13.6
SAME AS IBM AT

HIGH SPEED INDUSTRIAL GRADE COMPUTER FOR:
- Industrial
- Medical
- Scientific
- Engineering
- University/Education
- Artificial Intelligence

QUANTITY DISCOUNTS AVAILABLE FOR QUALIFIED DEALER, OEM, UNIVERSITY AND CORPORATE ACCOUNTS.

$599.00 OEM Quantity Price

Call for other pricing

Westech, Inc.

(714) 474-6022

17781 Mitchell, Irvine, CA 92714

Computing Power for future generations. . .
the right product at the right time.

Prices and availability subject to change.
* IBM AT is a trademark of International Business Machines Corporation.
Westech 286 Turbo is a trademark of Western Computer, Inc.

38¢ Each is all you have to pay for the best 5.25" Double Sided, Double Density diskettes to be found!

SuperStar™ and DISK WORLD!™ do it again: super-premium diskettes at the lowest prices to be found anywhere ...without lies, fraud, hokum or crazy deals.

The "Life Is Simple" price list for first-line, top-quality diskettes:

5.25"SSDD (P/N38002).....38 ea.
5.25" DSDD(P/N38012).....38 ea.
5.25"SSDD - 96TPI(P/N38022).....68 ea.
5.25" DSDD - 96TPI(P/N38032).....71 ea.
5.25" DSDD -HD(P/N38042).....$ 1.36 ea.

3.50" SSDD(P/N38052).....$ 1.39 ea.
3.50" DSDD(P/N38062).....$ 1.45 ea.

All prices quoted are for multiples of 100 each. Add 10% for orders of 50 each. All 5.25" diskettes are supplied with Tyvec™ sleeves, user ID labels and write-protect tabs. 3.50" diskettes are supplied with user ID labels.

Don't buy junk.

DISK WORLD!™ has always been the price and quality leader in diskettes.

Our SuperStar™ diskettes are fully certified to at least 65% clipping levels, far in excess of the ANSI and IBM™ standard of 40%.

Furthermore, SuperStar™ diskettes have jackets of at least 8-mils, as opposed to the 6-mil jackets offered by other low-priced brands. (And, believe us, jacket thickness makes a big difference in whether or not you will get read/write errors on your machine.)

SuperStar™ 3.50" diskettes are all licensed by Sony™ Corporation, the inventor of the 3.50" diskette standard, and meet their exacting standards.

All SuperStar™ diskettes carry a FULL LIFETIME WARRANTY against manufacturing and material defects.

Finally, all SuperStar™ diskettes are manufactured in the United States...not in Hong Kong, Taiwan, Pago Pago or other strange and exotic places where the standards of quality might not be quite as high.

In short, SuperStar™ diskettes are equal or superior to such famous brand names as 3m™, TDK™, Fuji™, Maxell™ and just about any other brand you can name!

SuperStar™ diskettes simply cost half as much or less.

The truth about diskette prices, brand names and some other unpleasant facts of life.

There are exactly two kinds of diskettes: good and bad.

The brand name...or absence of a brand name...on a diskette doesn't mean a thing in terms of quality.

Neither does the price.

For example, let's take a hard look at 3M™ diskettes, a brand which we have carried for more than three years.

During that time, we sold more than $ 6,500,000 worth of these diskettes...and that's one hell of a lot of diskettes.

Until very recently, we were proud to market 3M™ brand diskettes. Now we don't advertise them and actively discourage people from buying them.

Why?

Well, here's a quote from the July 21, 1986 Business Week magazine (page 107): "The disks have been plagued by quality problems recently..."according to one industry expert.

And a radical change in 3M's pricing policies has resulted in exactly the same diskette being sold at prices ranging from 29 to 89 cents, depending on who you were.

Not exactly a fair deal for anyone...except 3M™ which, according to Business Week earned a mere $ 73,000,000 in profits on magnetic media in 1985...mostly at your expense and ours while "(t)he diskettes have been plagued by quality problems recently..."

Counterfeiting and The Hong Kong Connection.

If the life of a diskette purchaser weren't bad enough already, there are now two more problems to contend with.

Counterfeiting is the newest game in town for the "let's get rich quick" crowd.

At least two mail order companies are currently operating very comfortable businesses offering "famous brand name" diskettes at unbeatable prices.

The prices ought to be unbeatable, since these two companies simply take an inferior diskette and slip into a Tyvec™ sleeve which they have printed to be an exact duplicate of the "famous brand name", slap on a forged manufacturer's label to the diskette and make a very tidy profit...without regard to the harm they are causing the end user.

Finally, there is now a wave of cheap, poorly made diskettes pouring in from the Orient, mostly Hong Kong. We are not talking about reputable brands such as Sony™ or Fuji™: we are talking about diskettes which are being turned out in sweatshops on outmoded equipment with little or no regard for quality control.

They show up in this country under a variety of names at extremely attractive prices. Prices so attractive, in fact, that your savings on buying these diskettes may just about pay for the cost of replacing your drives after you use them for a while.

90,000 DISK WORLD!™ customers really tell the story.

DISK WORLD!™ serves more than 90,000 customers throughout the United States and now the world. More and more major corporations, universities and governmental bodies have switched over to our SuperStar™ brands because they recognize that SuperStar™...with DISK WORLD!'s integrity standing behind it...offer absolutely the best combination of HIGH-QUALITY and LOW PRICE.

In short, DISK WORLD!™ and SuperStar™ are unbeatable.

Over the past three years, we've sold more than 30,000,000 diskettes.

Our return rate has been less than 1/10,000th of 1%.

Those two facts speak for themselves.

When every bit counts, it's SuperStar™!

We don't have to boast of imaginary factories employing "floppy phreaks", advertise diskettes for 39¢...if you buy 10,000 of them, offer "2 for 1" replacement guaranties or engage in any of the other hokum schemes designed to part you from your money.

Nor do we have to offer you "famous brand name" diskettes at inflated prices that don't offer you any more in quality, but do manage to support fleets of corporate jet aircraft and executive retreats in Minnesota and Canada.

We simply deliver the best for less.

More than a million diskettes a month flow out of our warehouse under the SuperStar™ "non-name". As noted, fewer than 1/10,000th of 1% of these are returned for any reason.

And that should say it all: SuperStar™ means far more for far less.

HOW TO ORDER:
ORDERS ONLY:
1-800-621-6827
(In Illinois: 1-312-256-7140)
INQUIRIES:
1-312-256-7140

FOR FASTEST SERVICE, USE NO -COST MCI MAIL. Our address is DISKORDER. It's a FREE ,MCI MAIL letter. No charge to you. (Situation permitting, we'll ship these orders in 24 hours or less.)

SHIPPING: 5.25" & 3.50" DISKETTES-Add $ 3.00 per each 100 or fewer diskettes. **OTHER ITEMS:** Add shipping charges as shown in addition to other shipping charges. **PAYMENT:** VISA, MASTERCARD and Prepaid orders accepted. **COD ORDERS:** Add $ 5.00 special handling charge. **APO, FPO, AK, HI & PR ORDERS:** Include shipping charges as shown and additional 5% of total order amount to cover PAL and insurance. We ship only to United States addresses, except as shown above. **TAXES:** Illinois residents add 7% sales tax.

DISK WORLD!, Inc.

629 Green Bay Road
Wilmette, Illinois 60091

LIQUIDATION!

Lowest Prices Anywhere!

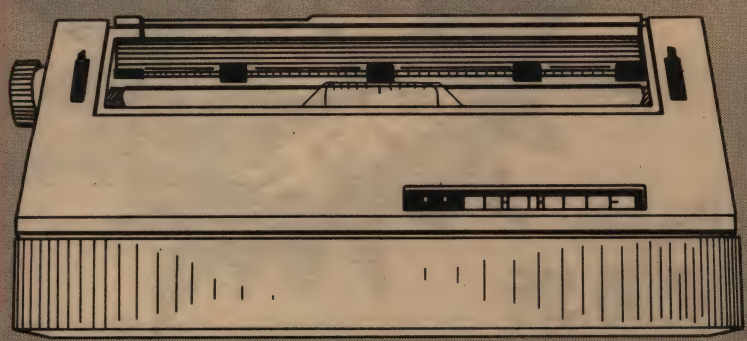
BCE

Private Label

brother® HR-35

33 CPS Wide Carriage Daisywheel Printer

68% OFF LIST



Made by Brother for a Major U.S. Manufacturer

~~Mfr. Retail $1,245.00~~

ONLY $395

Parallel and Serial Models Available

- 33 CPS Bi-Directional Printing
- Easily Changeable Daisywheel Cartridges
- 7K Buffer
- Automatically Reprints Buffer, Up to 4 Pages, at the Touch of a Button
- Two Color Printing Capability

Specifications

Print speed: 33 CPS
Print wheel: 96 characters/wheel, (Cassette type, easily changed by operator)
Print wheel life: 10 million characters min./wheel
Characters/line: 132 characters—10 pitch, 158 characters—12 pitch, 198 characters—15 pitch
Paper width: 16.5 inches (419mm)
Copy Capacity: Original + 4 copies
Carriage motion: Bi-directional, friction platen
Ribbon: Cassette type: Single strike ribbon (60,000 char. max); Multi-strike ribbon (150,000 char. max.); Fabric ribbon (500,000 char max.)
Control panel: Indicators: SELECT, POWER, ALARM, COPY, LINE, PITCH Switches: SELECT, LF, TOF, LINE, PITCH, COPY
Noise: Less than 65 dB
Power Consumption: 65W
Reliability: MTBF 3000 hrs. (25% duty)
Dimensions: 21.2"(W) x 7.5"(H) x 15.2"(D)
Weight: 33 lbs.

Why Such a Bargain?

The high quality daisywheel printer is loaded with features—easily changeable daisywheel cartridges, automatic reprinting at the touch of a button, two color printing capability and much more! It's selling elsewhere in this issue for $700.00 to $800.00. So how can we sell it so inexpensively?

Brother sold these printers to a large well known American manufacturer of high quality commercial dot matrix printers. (We've been asked by the manufacturer not to print their name in our ads, but we can tell you when you call.) The manufacturer attempted to enter the letter quality printer market with these printers, but found it a bit tougher than they expected. Most of their distributors already carried a full line of letter quality printers and were reluctant to add this new printer to their product line.

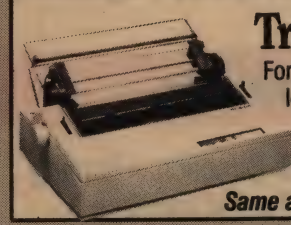
As a result, the manufacturer returned their focus to the commercial printer market, and we were able to acquire these printers at a great price and pass the savings along to you. These printers are covered by the manufacturer's 90 day warranty and our 15 day 100% satisfaction guarantee. We've also got sheetfeeders for $119 and tractorfeeds for $69—you just can't beat these prices!

Cut Sheet Feeder

Holds up to 150 sheets, adjustable roller guide lets you print envelopes without removing sheetfeeder.

$119

Same as Brother CF-100



Tractorfeed

For continuous forms, long printouts.

$69

Same as Brother TF-100

100% Satisfaction Guarantee

90 day manufacturer's warranty plus 15 day trial. If you are not satisfied with this printer for any reason, simply call to return it within 15 days of receipt for a complete refund.

Ordering Information

Product #	Item	Price	Shipping
BR35P-C10	Private Label Brother HR-35 Parallel Model	$395	$22
BR35S-C10	Private Label Brother HR-35 Serial Model	$395	$22
CA200-C10	IBM Parallel Cable	$19	FREE SHIPPING WITH PRINTER ORDER
CA250-C10	Centronics to Centronics Parallel Cable	$19	

Order Toll Free
1-800-545-7447

Or Send Check Or Money Order To

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

Product Information
1-202-944-3900, 9 AM - 8 PM, EST, M-F

Customer Service Inquiries
1-800-231-3549, 9 AM - 5 PM EST, M-F

VISA *Order Toll Free* MasterCard
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

BCE

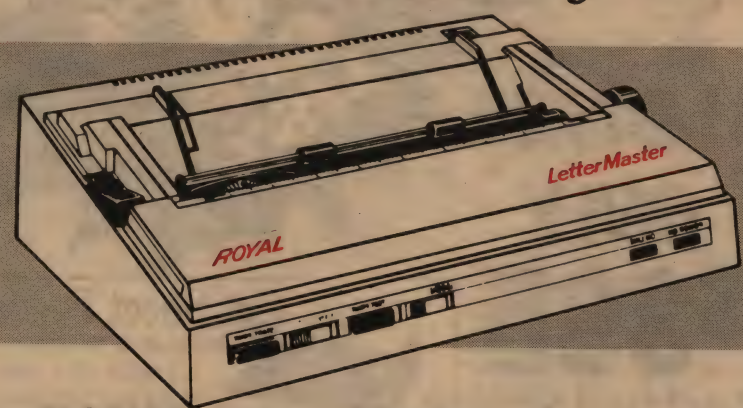
BCE LIQUIDATION!

Lowest Prices Anywhere!

Printer Liquidation!

Daisywheel Letter Quality Printer

59% OFF



List Price ~~$239.95~~

ONLY $99

The ROYAL Letter Master

- **Works With IBM, Apple, etc.**
- **Works With Most Popular Processing Programs**

Features

- Bi-Directional Printing
- Parallel Interface
- 94 Character Elite Printwheel
- Innovative Inkroll Printing
- Print Pitch and Line Feed Selectors
- 84 Character Print Buffer
- Handy Reference Guide
- Underlining and Bold Printing
- Variable Form Length Settings
- Variable Tabulation Settings
- Variable Right Margin Settings

Specifications

Character Type: Fully formed daisywheel characters
Printwheel: 10/12 Elite ASCII 94 character printwheel
Print Method: Bi-directional logic seeking
Print Speed: 10 CPS (8 CPS Shannon Text)
Print Buffer: 84 characters
Columns Per Line: 66 @ 10 CPI, 80 @ 12 CPI
Print Line Width: 6.6 inches
Maximum Paper Width: 8.5 inches
Carbon Copy Capacity: Original plus 3 copies
Paper Feed: Friction feed
Inkroll: Black, 100,000
Front Panel Controls: Test Print Key, Start Print Key, Print Pitch Selector, Line Feed Selector
Indicators (LED): Power On, On Line
Interface: Parallel centronics
Size: 4.5"(H) x 13.5"(W) x 10.8"(D)
Weight: 7.9 lbs.

Ordering Information

Product #	Item	Price	Shipping
RY800-C10	Royal Letter Master Printer	$99	$12
CA200-C10	IBM Parallel Cable	$19	FREE SHIPPING WITH PRINTER ORDER
CA250-C10	Centronics to Centronics Parallel Cable	$19	

100% Satisfaction Guarantee

90 day manufacturer's warranty plus 15 day trial. If you are not satisfied with this printer for any reason, simply call to return it within 15 days of receipt for a complete refund.

Order Toll Free
1-800-545-7447

Or Send Check Or Money Order To

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

A

© 1986 BCE

BCE

VISA Order Toll Free MasterCard
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

Ordering Information

Please specify Product Number when ordering. We ship UPS Ground anywhere in the continental USA. Allow three weeks shipping time. To return an item, call Customer Service (1-800-545-7447) for an authorization number. Quantities of all items are limited. Order Now!

LIQUIDATION!

Lowest Prices Anywhere!

BCE

Apple II Disk Drive Liquidation!

ONLY $67

Made by **Mycomp**

~~Comparable Price $129.00~~

- *Completely Apple Compatible!*
- *Plugs Directly Into Apple Disk Controller— No Modification Needed!*
- *Trim Line Half Height Design!*
- *Quiet Operation!*

- Cables for Apple II, IIe and II+ Included
- Apple IIc Interface Also Available
- Snap Door Handles
- LED Operating Indicator

Specifications

Disk type: 5½" inch, single sided floppy
Computer Capability: Apple II family and compatibles
Capacity: 140 kilobytes
Number of Tracks: 40
Sectors per Track: 13 or 16
Rotation Speed: 300 RPM
Track Density: 48 TPI
Track to Track Time: 6 msec
Dimensions: 1.7"(H) x 5.8"(W) x 8.9"(D)
Weight: 4 pounds

Ordering Information

Product #	Item	Price	Shipping
DD140-C10	Apple II Disk Drive	$67	$7
CA600-C10	Apple IIc Adapter Cable	$19	FREE SHIPPING WITH PRINTER ORDER

100% Satisfaction Guarantee
60 day warranty from BCE plus 15 day trial. If you are not satisfied with this disk drive for any reason, simply call to return it within 15 days of receipt for a complete refund.

Order Toll Free
1-800-545-7447

Or Send Check or Money Order To

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

A

© 1986 BCE

Product Information
1-202-944-3900, 9 AM - 8 PM, EST, M-F

Customer Service Inquiries
1-800-231-3549, 9 AM - 5 PM EST, M-F

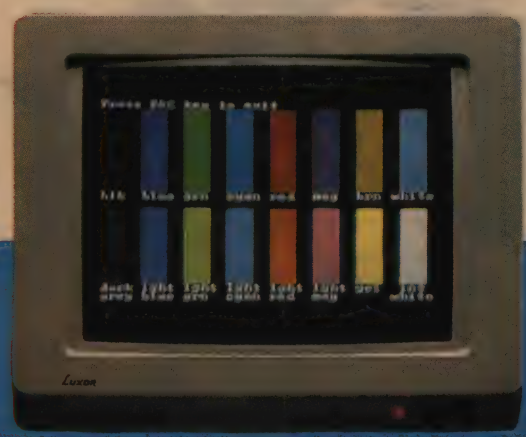
VISA *Order Toll Free* MasterCard
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

BCE

BCE LIQUIDATION!

Lowest Prices Anywhere!

CGA Color Monitor Liquidation



Comparable Price
~~$499.00~~

ONLY $249

14" IBM Compatible Color Monitor

by Luxor Electronics
One of the world's largest manufacturers of computer equipment.

High Resolution Interlaced Graphics

- CGA Graphics (640x200) With CGA Board
- Even Higher Resolution with Interlaced Graphics Boards, Such as the TECMAR Graphics Master®

100% Satisfaction Guarantee

60 day manufacturer's warranty plus 15 day trial. If you are not satisfied with this monitor for any reason, simply call to return it within 15 days of receipt for a complete refund.

Ordering Information

Please specify **Product #LX140-C10 when ordering. Add $20 per unit shipping and handling.**

Order Toll Free

1-800-545-7447

Specifications

PICTURE:

Resolution:	640 x 200 in CGA higher in interlaced mode
Usable size:	X-255mm Y-190mm
Pincushion Distortion:	Upper-lower, max 2% (typ 1%) Right-left, max 1% (adjustable)
Linearity (relative):	Horizontal, max 5% Vertical, max 5%
Misconvergence:	Center, max .3mm Corners, max .6mm
Size Variation:	As function of brightness, max 4mm As function of mains variation ±max 2mm.

CRT:
Gun: in-line type
Raster: Dot Screen
Mask: Round Aperture mask
Spacing: .31mm pitch

SCREEN:
Non-glare treatment by direct etching in combination with wave length selective glass. P22 phosphor black matrix.

VIDEO AMPLIFIER:

Pulse Response	Rise/fall-time <15ns
Brandwidth:	>25 MHz

TIMING:

Scanning Frequency:	Horizontal, max .3mm Vertical, max 15ms

Time for video information:
Horizontal, max 50us

WARM-UP TIME:
Picture after 5 sec (quick heat cathode)

DEGAUSSING:
Automatic at switch-on of display

POWER SUPPLY:
Power Supply of switch-mode type
Alternative power units for 220V and 110V
Accepts a main variation of ±15% without essential influence in the picture
External D.C. ouput 24V/1.5 A available for user (supply for external equipment)
Power consumption (from mains): 70.W
With 1.5 A load on DC output: 110 W

CONTROLS:
External controls:
Brightness, contrast, on/off, on/off indication by LED at front
Internal Controls:
Height, width, linearity, H-frequency, V-frequency, H-phase, centering, pincushion (E-W and tilt), Focus intensified RGB

MECHANICS:
Anti-corrosion treated steel sheet
Weight: 15.7 kg.
Plastic front bezel

Or Send Check Or Money Order To

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

© 1986 BCE

BCE

VISA *Order Toll Free* MasterCard

1-800-545-7447

Monday–Friday, 9 AM - 8 PM, EST

Ordering Information

Please specify Product Number when ordering. We ship UPS Ground anywhere in the continental USA. Allow three weeks shipping time. To return an item, call Customer Service (1-800-545-7447) for an authorization number. Quantities of all items are limited. Order Now!

LIQUIDATION!

Lowest Prices Anywhere!

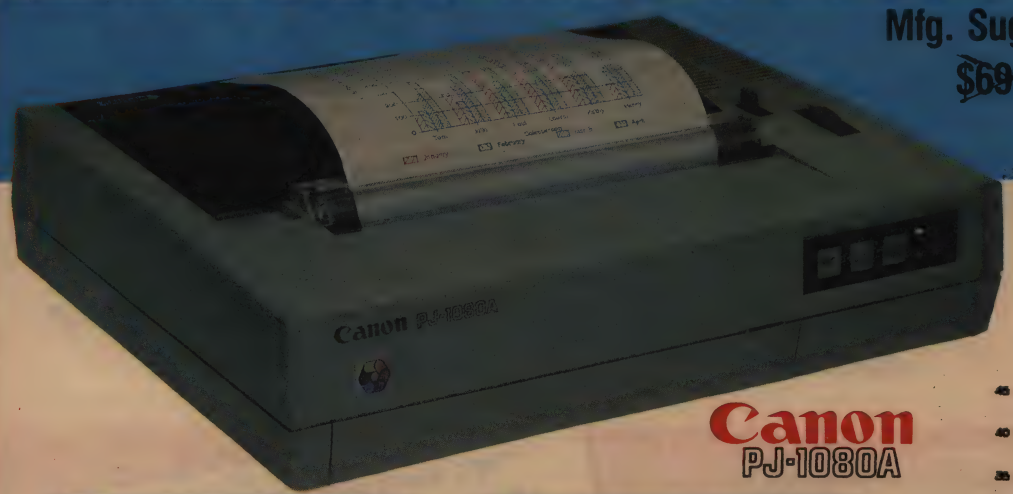
BCE

Printer Liquidation

7 Color Ink Jet Printer

Does Lotus Graphics!

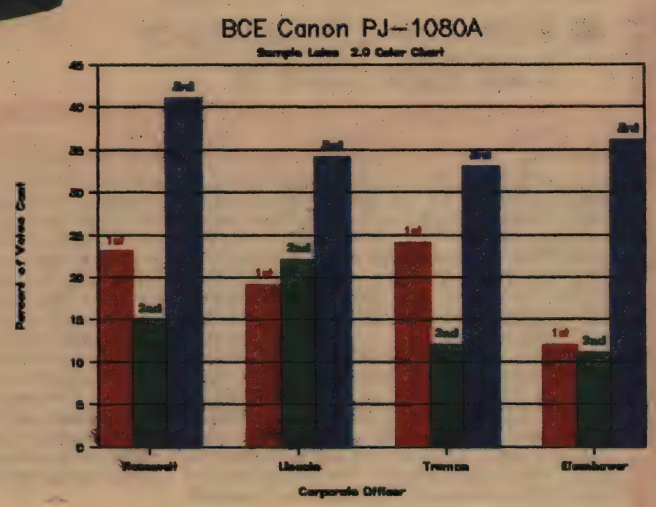
72% OFF LIST



Mfg. Sug. Retail ~~$699.00~~

Liquidation Price **$199**

Created with Lotus 1-2-3 Release 2



Canon PJ-1080A

Features:

- Seven bold colors—red, blue, yellow, green, magenta, cyan, black
- Quiet, high-speed-prints at 37 cps and under 50 dB
- High resolution—640 dots per line
- Advanced drop on demand ink jet printing system
- Large capacity ink cartridges—approx. 3.2 million characters per color
- Black or white reversible background
- Automatic vertical and horizontal tabulation
- Page length per inch setting
- International character sets selectable
- Overhead projection film can be used

Specifications

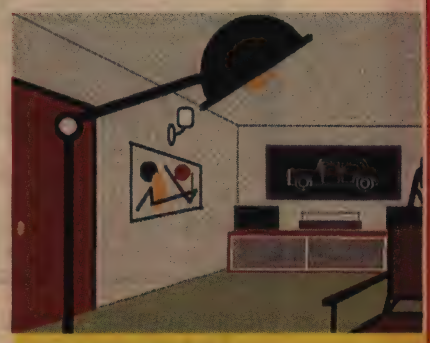
Printing method: Drop on demand ink jet printing
Print head: Piezo-electric type
Nozzle: Four horizontally arranged nozzles
Printing direction: Bi-directional line scanning
Printing characters: Character composition: Standard 5x7 dot matrix; Character set: full ASCII character set (96) and special characters; Character size: 1.5 x 2.7mm (standard), 3.0 x 2.7mm (enlarged)
Maximum characters per line: 80 chars per line standard, 40 chars per line enlarged
Image printing: Image data: vertical 8 dot information; Resolution: 560 dots per line
Color hard copy: Data: horizontal 8 dot information; Resolution: 640 dots per line
Interface: 8 bit parallel interface (Centronix type)
Paper: Paper type: plain paper; Roll paper: max width 8½" max., diameter 2¾"; Single sheet: max width 8½"
Overhead projection film: A-4 single sheet (Canon specified only)
Ink cartridge: Type: dual-cartridge ink supply; Ink amount: black-25cc, other colors—20cc each; Ink life: approx. 3.5 million characters per color
Physical dimensions: Size: 15¾" x 11⅝" x 4¼"; Weight: 12.3 lbs.

Works With These Popular Software Packages:

Lotus 123	Keychart
PC Paintbrush	Telescan Analyzer
PFS Graph	Chart, Decision & Sign Master
PFS Write	EV Capture
Colorscreenprint	The Weather Station
Snapshot	PJ-Handler
Infographics	
Symphony	

And More...

PRINT SAMPLES



Send Check or Money Order or Charge

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

100% Satisfaction Guarantee
One year factory warranty plus 15 day trial. If you are not completely satisfied for any reason simply call us within 15 days for a full refund.

Quantity Discounts Available

When ordering, please specify **Product #C710-C10.**

$199

Add $12 shipping and handling

© 1986 BCE

Product Information
1-202-944-3900, 9 AM - 8 PM, EST, M-F

Customer Service Inquiries
1-800-231-3549, 9 AM - 5 PM EST, M-F

VISA *Order Toll Free* MasterCard
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

BCE

BCE LEADING EDGE

Lotus 1-2-3®
Look-Alike

Mfr. Retail
~~$145.00~~

ONLY $39

The Twin

From Leading Edge®

For IBM and All Compatible Systems

This price good through October 14, 1986. Offer may or may not be repeated next month.

- ▲ Reads and Writes Lotus Files
- ▲ Superior Graphics To Lotus
- ▲ Work Area—256 Columns by 8,092 Rows (Same as Release 2 of Lotus)
- ▲ Supports 8087/80287 Math Coprocessors
- ▲ Not Copy Protected
- ▲ Free Customer Support
- ▲ 1 Year Warranty

Spreadsheet Features

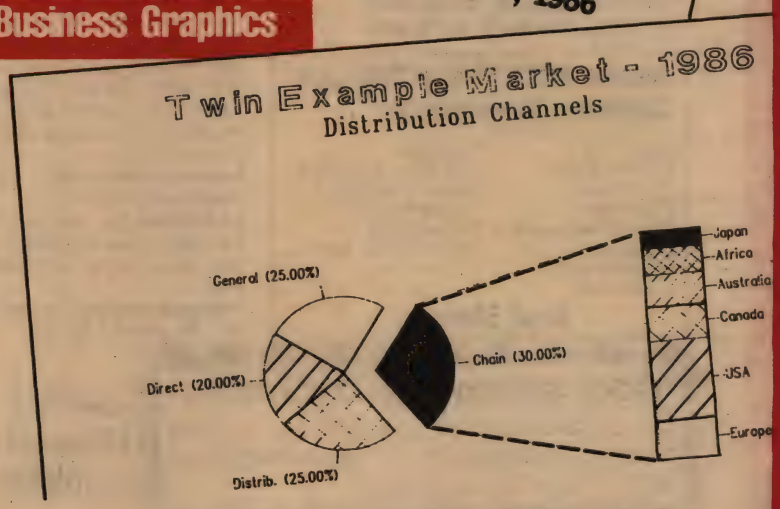
• 255 by 8192 worksheet area • Macros, both keyboard and global with iteration and user defined • Macro compatibility • Reads and writes 1-2-3 data files directly • Financial Functions: FV, PV, PMT, RATE, MIRR, NPV, IRR, NPER • Statistical Functions: MIN, MAX, STD, VAR, COUNT, SUM, AVG • Database Statistical Functions: DSUM, DAVG, DCOUNT, DVAR, DSTD, DMIN, DMAX • Logical Functions: #NOT#, #AND#, #OR#, TRUE, FALSE, IF, AND, OR, NOT, ISNA, ISERR, >, <, =, >=, <=, <> • Mathematical Functions: +, –, *, /, ACOS, ATAN, ASIN, COS, TAN, SIN, ABS, EXP, INT, LOG, MOD, PI, ROUND, SORT, ATN ±, SQRT, RAND LN • Selection Functions: CHOOSE, HLOOKUP, VLOOKUP • Date Functions: DATE, TODAY, DAY, MONTH, YEAR • Translate data from other programs without exiting program • Configure hardware with easy to use input from screen, without exiting program • Flexible color definition of the TWIN on your screen • Print Headers and Footers with date and page number functions • Graphics created directly from spreadsheet data • Pie charts 2-D, 3-D • Pie-Bar combination • Colors and shading definable for each slice • Slices can be exploded • Vertical bars 2-D clustered, 2-D stacked, 3-D clustered • Colors and shadings for bars user definable • Bar top labels • X-axis, Y-axis, and grids are optional • Line charts of up to 8 lines per chart • Color and line type for each line is user definable • Linear or LOG axis in any combination • All charts have 3 lines of titles and 3 lines of footnotes. Each 8 sizes, 8 different colors, different fonts, left-center-right justified • 11 different text fonts • Plotting with plotters on paper or transparency • Hercules and color monitors supported • Simultaneous display on 2 monitors • 2 level graphics. Analysis and Presentation • Special "FILL-IN-THE-BLANKS" INPUT FORMS • On screen slide presentation • Print and plot without exiting program.

"Twin has a wider selection of graph types, styles and options that 1-2-3."

"Anyone who uses release 1A of 1-2-3 would be completely at home working with Twin."

—PC Week, May 6, 1986

Business Graphics



100% Satisfaction Guaranteed

Unprecedented! We Trust You!

If you are not completely satisfied with this software after a 15 day trial, simply call us to return it for a complete refund.

When ordering, please specify **Product #LE123-C10.**
Add $5 shipping and handling per package.

Order Toll Free
1-800-545-7447

Or Send Check Or Money Order To

BCE 3233 K Street, NW
Department C10
Washington, DC 20007

Quantity Discounts Available

© 1986 BCE

BCE

VISA *Order Toll Free* MasterCard

1-800-545-7447

Monday–Friday, 9 AM - 8 PM, EST

Ordering Information

Please specify Product Number when ordering. We ship UPS Ground anywhere in the continental USA. Allow three weeks shipping time. To return an item, call Customer Service (1-800-545-7447) for an authorization number. Quantities of all items are limited. Order Now!

SOFTWARE BCE

Nutshell Database Manager

New Upgraded Version 2.0!

PC Magazine Editor's Choice

~~Mfr. Retail $195.00~~

ONLY $39

From Leading Edge®

For IBM and All Compatible Systems

This price good through October 14, 1986. Offer may or may not be repeated next month.

- ▲ **Word Processing and Calculating Features**
- ▲ **Unlimited Display Capability**—Create and store as many layouts as you like for each database
- ▲ **Customer Support**—Complete Documentation, Toll Free Support Line, 1 Year Warranty
- ▲ Easy Data Entry Using Lists, Ranges, Unique and Ditto Commands
- ▲ **Easy To Use Menu Driven System**
- ▲ **Flexible**—You can easily alter the size of your fields and create as many records and files as you have disk space for
- ▲ **Indexing Capability**—Each word and number in your database is automatically indexed and stored

"Nutshell is one of the best kept secrets among database management software."

"The capacity of Nutshell is apparently nearly unlimited."

"Nutshell is the simplest, most intuitive and attractive flatfile database manager on the market."

—PC Week, April 8, 1986

"Nutshell offers both ease of use and unusual versatility."

—PC Magazine, July 1986

100% Satisfaction Guaranteed

Unprecedented! We Trust You!

If you are not completely satisfied with this software after a 15 day trial, simply call us to return it for a complete refund.

Features & Specifications

NUTSHELL TECHNICAL SPECIFICATIONS

- **Fields per record:** Variable: 60,000 maximum*
- **Number of keys per record:** All fields are keys
- **Characters per field:** Variable: 16 million maximum*
- **Characters per record:** Variable: 16 million maximum*
- **Files per disk:** Limited only by disk space
- **Layouts per file:** 2 million maximum*
- **Records per file:** 2 billion maximum*
- **Digits of accuracy:** 14 decimal digits
- **Range of dates:** 1/1/0000 to 12/31/3000
- **Size of layout:** Variable: 240 columns by 65000 lines maximum
- **Sort fields:** Unlimited characters
- **Query speed:** A single key search locates a unique record from 1000 records in two seconds.

* subject to disk space limitations

FILE STRUCTURE

- Unlimited number of key fields
- Hierarchical file structure
- Text/Numeric/Data/Calculated/Summary fields

REPORTS

- Custom forms preparation
- Save and recall up to 60,000 reports per file
- Preview reports on the screen, up to 240 columns, 65,000 lines
- Unlimited formatting capability
- Visual field placement
- Totals/Counts/Averages
- Control breaks with sub-totals, sub-counts, and sub-averages at any sort level
- Multi-field sorts (performed automatically)
- Label formats
- Input from ASCII file, DIF and dBase II®
- Output to ASCII file, DIF and dBase II®

DOCUMENTATION

- Over 25 context-dependent Help screens
- Comprehensive reference manual
- Sample applications

When ordering, please specify **Product #LE777-C10. Add $5 shipping and handling per package.**

Quantity Discounts Available

Order Toll Free **1-800-545-7447** *Or Send Check or Money Order To* **BCE** 3233 K Street, NW Department C10 Washington, DC 20007

A

Product Information
1-202-944-3900, 9 AM - 8 PM, EST, M-F

Customer Service Inquiries
1-800-231-3549, 9 AM - 5 PM EST, M-F

VISA *Order Toll Free* MasterCard
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

BCE

© 1986 BCE

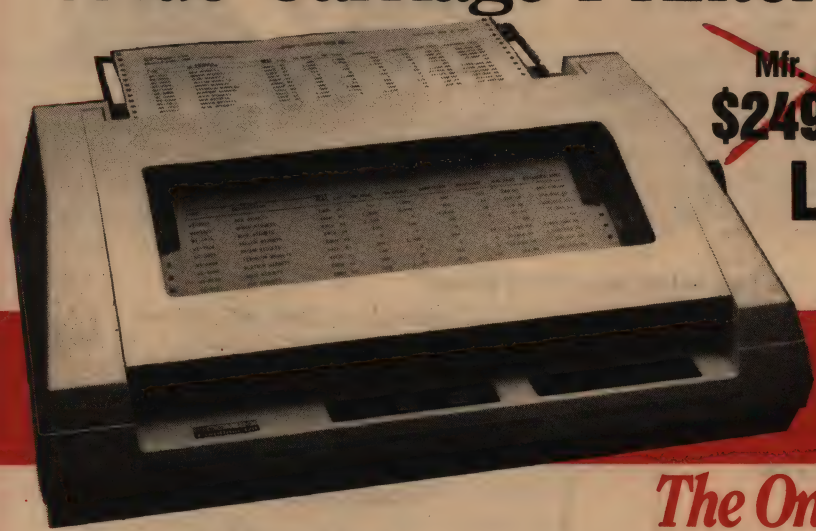
BCE LIQUIDATION!

Lowest Prices Anywhere!

Liquidation!

420 CPS/NLQ
Wide Carriage Printer

64% OFF LIST



~~Mfr. Retail $2495.00~~

Liquidation Price $895

EPSON® COMREX CR420
Same as Epson 420i

The Only Printer You'll Ever Need!

Does IBM Graphics!

- 417 CPS Draft, 104 CPS NLQ
- Complete IBM Text and Graphics Character Sets
- Type Styles Selectable from Front Panel
- Built-In Tractorfeed—Rear and Bottom Feed
- Parallel *and* Serial Interfaces
- 18K Buffer
- Built-In Acoustic Cover
- Heavy Duty Construction
- 1 Year Factory Warranty

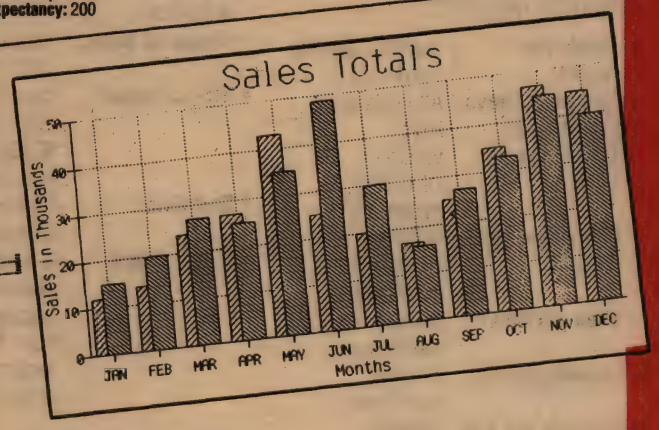
Specifications

Print Method: Impact Dot Matrix **Print Direction:** Bidirectional Logic Seeking **Print Speed:** 417 cps Standard 10, 12, 16 Pitch, 208 cps Boldface & Super/Subscript, 104 cps Near Letter Quality **Number of pins:** 8 (Staggered Arrangement) **Character Set:** IBM PC Compatible, Low & High Order Character Set **Character Styles:** Draft—10, 12, 16, and 20 Pitch Near Letter Quality—10, 12, and Proportional Pitch **Character Attributes:** Boldface, Italicized, Expanded, Super/Subscripted, Underlined **Interfaces:** Parallel Centronics and Serial RS-232C **Baud Rate:** 1200, 2400, 4800, 9600 **18K Input Buffer:** Standard **Indicators:** Power On, Paper Out, On-line **Switches:** Power On/Off, On-Line, Top of Form Set, Form Feed, Line Feed Reset **Detectors:** Paper Out and Error Detection Alarm **Print Head Life Expectancy:** 200 Million Characters **MTBF (Excluding Print Head, Life):** 3200 Hours at 25% Duty Cycle & 30% Page Density **Ribbon Type:** Cartridge **Ribbon Life Expectancy:** 10 Million Characters, Draft, 78 Million Characters, Correspondence **Power Consumption:** 175 Average Watts (Printing), 55 Watts (Standby) **Paper Feed:** Friction and Pin Feed **Form Width:** 4⅞"–15½" **Copies:** Original plus Four (maximum thickness 0.0118", carbonless) **Paper Path:** Rear and Bottom **Dimensions:** 23.4"(W) x 7.6"(H) x 15.9"(D) **Weight:** 60 lb. **Front Panel Selection of:** Nine Fonts, Nine Forms Lengths **Acoustal Noise:** 60db(A) **Standard Accessories:** Cassette Style Ribbon, Single Color; Paper Rack, User's Guide

100% Satisfaction Guarantee

1 year factory warranty from EPSON plus 15 day trial. If you are not satisfied with this printer for any reason, simply call to return it within 15 days of receipt for a complete refund.

Print Sample:
Correspondence
Elite
Proportional
Condensed
Expanded
Emphasized
Super and Subscript
Underline
Italics



Ordering Information

Product #	Item	Price	Shipping
C420-C10	Epson/Comrex 420i	$895	$57
CA200-C10	IBM Parallel Cable	$19	FREE SHIPPING WITH PRINTER ORDER
CA250-C10	Centronics to Centronics Parallel Cable	$19	

Note: This printer cannot be shipped UPS.

Order Toll Free
1-800-545-7447

Or Send Check Or Money Order To

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

BCE

VISA *Order Toll Free* MasterCard
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

Ordering Information

Please specify Product Number when ordering. We ship UPS Ground anywhere in the continental USA. Allow three weeks shipping time. To return an item, call Customer Service (1-800-545-7447) for an authorization number. Quantities of all items are limited. Order Now!

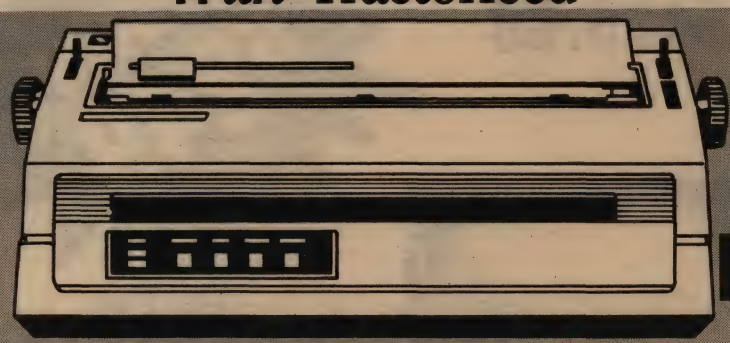
LIQUIDATION!

Lowest Prices Anywhere!

BCE

Printer Liquidation!

19 CPS Daisywheel Printer
With Tractorfeed



63% OFF LIST

Mfr. Retail
$808.00

Liquidation Price $299

SILVER REED EXP 550

- 19 CPS Bi-Directional Printing
- Diablo 1610/1620 Compatible
- Proportional Spacing
- Parallel Interface
- Works With Most Popular Word Processing Programs

"It's reasonably priced (at list price—$808), sturdily built, and includes many features, such as rudimentary graphics and incremental spacings, that you don't always find on letter-quality printers."
—Printers Buyer's Guide and Handbook, Summer 1986

Specifications

Type element: Type wheel, serial impact printer
Interface: Parallel Centronics
Emulation: Diablo 1610/1620
Printing direction: Bi-directional system
Type Wheel: 96 Characters (Double molded)
Printing speed: 19 cps
Printing pitch: 10, 12, 15 & proportional spacing
Paper width: 10 pitch: 132 cpl; 12 pitch: 158 cpl; 15 pitch: 197 cpl
Printing line: 13.2 inch
Copy capacity: 1 original + 3 copies
Ribbon: Multi-strike carbon (standard), one-time carbon, and Fabric—All compatible with Olivetti ET lines
Control panel: ON LINE, LINE FEED, FORM FEED, TOF SET; Lamps: POWER, ALERT, ON LINE
Paper feed speed: 4 ips
Weight: Approx. 30.9 lbs.
Dimensions: 21(W) x 7(H) x 15(D) inches
Noise level: 65 dB or less (A scale)
Reliability: 2700 hours at 25% duty

100% Satisfaction Guarantee

90 day manufacturer's warranty plus 15 day trial. If you are not satisfied with this printer for any reason, simply call to return it within 15 days of receipt for a complete refund.

Ordering Information

Product #	Item	Price	Shipping
SR550-C10	Silver Reed EXP 550 Printer	$319	$22
CA200-C10	IBM Parallel Cable	$19	FREE SHIPPING WITH PRINTER ORDER
CA250-C10	Centronics to Centronics Parallel Cable	$19	

Order Toll Free
1-800-545-7447

Or Send Check Or Money Order To

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

Product Information
1-202-944-3900, 9 AM - 8 PM, EST, M-F

Customer Service Inquiries
1-800-231-3549, 9 AM - 5 PM EST, M-F

VISA *Order Toll Free* MasterCard
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

BCE

BCE LIQUIDATION!

Lowest Prices Anywhere!

Uninterruptable Power Supply (UPS)

~~List Price~~
~~$435.00~~

ONLY $249

MINUTEMAN™ 250

By PARA SYSTEMS, INC.

For Use
With PC's, XT's *and* AT's

2 Outlets
250 Watts

TOTAL POWER PROTECTION

• Blackouts • Interruptions • Brownouts
• Surges • Spikes • EMI/RFI Noise

Why You *Need* A UPS

According to a national survey, an average of 128.3 harmful power line disturbances occur per outlet each month. Each of these power disturbances could cause catastrophic damage to computers and loss or alteration of data. The MINUTEMAN 250 provides standby emergency power for blackouts, interruptions and brownouts. It also provides continuous protection from surges, spikes and line noise of all types.

When blackouts, brownouts or power interruptions occur, the MINUTEMAN 250 instantly switches (in less than 4 msec) to inverter operation and supplies power to maintain computer systems operation. Indicator lights and audible alarms notify the user of inverter and battery status. Since most power outages and brownouts are of very short duration, AC operation will generally by restored automatically prior to the two minute warning, eliminating the need for computer system shutdown.

The surge protector remains operational during inverter operation to guard against power surges during the return to AC operation. The built-in 3 stage EMI/RFI filtered surge protector provides instantaneous protection against power surges, spikes, electromagnetic interference (EMI) and radio frequency interference (RFI), providing clean AC power to all protected equipment. During AC operation the internal battery is automatically charged.

Features:

- Full 250 Watt Output Power Capability
- Two Grounded, UL Approved, Outlets For Multiple Unit Protection
- Extremely Fast Transfer Time (1 to 4 msec)
- Simple to Use—Completely Automatic Operation
- 99% Efficient in AC Mode, 70% Efficient in Inverter Mode
- Internal, Completely Sealed, Maintenance Free Battery (12 Volt System)
- Alarm Levels and LED Light Indicators Note Battery Switchover and Remaining Operating Time
- Easy to Reach and Replace Input and Output Fuses

100% Satisfaction Guarantee

Full manufacturer's warranty plus 15 day trial. If you are not satisfied with this UPS for any reason, simply call to return it within 15 days of receipt for a complete refund.

Ordering Information

When ordering, please specify **Product #PS250-C10. Add $20 per unit shipping and handling.**

Order Toll Free
1-800-545-7447

Or Send Check Or Money Order To

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

© 1986 BCE

BCE

VISA *Order Toll Free* MasterCard
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

Ordering Information

Please specify Product Number when ordering. We ship UPS Ground anywhere in the continental USA. Allow three weeks shipping time. To return an item, call Customer Service (1-800-545-7447) for an authorization number. Quantities of all items are limited. Order Now!

LIQUIDATION!

Lowest Prices Anywhere!

BCE

100% IBM Compatible Computer Liquidation!

74% OFF

~~Original Mfr. Retail $2995.00~~

cordata PC
Formerly corona data systems, Inc.

Get A Top Quality, Fully Warranted Computer System, Made By A Leading PC Manufacturer, For Less Than The Price Of Most Clones!

With 256K RAM $749

With 512K RAM $799

Model PC325

Complete With Hi-Res Monitor and 2 Disk Drives!

Specifications

- MS-DOS 2.11, GW Basic 2.0, PC Tutor Included
- 2 Half Height 360K DSDD Floppy Drives (With Space For a Hard Disk)
- 14" Hi-Res TTL Swivel/Tilt Monitor
- 640 x 325 Pixels
- Selectric Style Keyboard
- 8088 Processor
- Serial and Parallel Ports
- 4 Full Length Expansion Slots
- 110 Watt Power Supply
- Nationwide Service Available
- 90 Day Manufacturer's Warranty

100% Satisfaction Guarantee

90 day manufacturer's warranty plus 15 day trial. If you are not satisfied with this computer for any reason, simply call to return it within 15 days of receipt for a complete refund.

Ordering Information

Product #	Item	Price	Shipping
CR256-C10	Corona PC325 w/256K RAM	$749	$29
CR512-C10	Corona PC325 w/512K RAM	$799	$29
CR727-C10	Corona Portable	$729	$23

Model PPC-1

Cordata Portables

- 256K RAM
- 1 Half Height DSDD Floppy Drive
- 8088 Processor
- Built-In Hi-Res Monitor
- Selectric Style Keyboard
- MS-DOS 2.11, GW Basic, PC Tutor Included
- Serial & Parallel Ports
- 4 Expansion Slots
- 90 Day Warranty

Only $729

Order Toll Free
1-800-545-7447

Or Send Check Or Money Order To

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

© 1986 BCE

Product Information
1-202-944-3900, 9 AM - 8 PM, EST, M-F

Customer Service Inquiries
1-800-231-3549, 9 AM - 5 PM EST, M-F

VISA *Order Toll Free* MasterCard
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

BCE

BCE LIQUIDATION!

Lowest Prices Anywhere!

Printer Liquidation

40 CPS Wide Carriage Letter Quality Daisywheel Printer

80% OFF

Mfr. Sug. Retail ~~$1795.00~~

Liquidation Price $349

With Cut Sheet Feeder Only $499

Made by TEC, *(Manufacturer of C.Itoh Starwriter F10-40)*

Features & Specifications

- Heavy duty aluminum diecast frame.
- Easily accessible dip switches for quick changing of print modes.
- Parallel centronics interface—works with Apple, IBM, Kaypro, etc.
- Automatic Self-Test.
- Automatic print pressure control prolongs print wheel life by varying printing pressure according to character shape.
- Paper Out Detector interrupts print operation.
- Uses standard Diablo printwheels and ribbon cartridges.
- Tractorfeed and sheetfeeder available.
- Underscore, double strike, and shadow print capabilities.
- Proportional spacing.
- Software compatible with Diablo 630.
- Full 90 day factory warranty.
- 15 Day Trial.
- Nationwide service available.

Print Speed: 40 cps printing.
Number of columns: 136 (Pica pitch), 163 (Elite pitch)
Print spacing (min): 1/120 in.
Line feed spacing (min): 1/48 in.
Paper width: 15 in.; Print area, 13.6 in.
Printing System: Static font impact system
Number of copies: Original plus 2 copies (0.2mm thick)
Number of character types per wheel: 96
Fonts: Courier 10 standard, plus all other Diablo fonts
Pitch: 10, 12, 15, proportional
Interface: Centronics parallel
Power Source: 90-127 Volts at 60hz
Noise Level: Less than 65db
Physical dimensions: 6"(H) x 16"(W) x 24"(L)
Weight: 30.8 lbs.

FREE RIBBONS!

With every Commodore 6400 printer order, we'll send you **12** Diablo 630 type fabric ribbon cartridges, **absolutely free!**

While supplies last!

$9.95 Leading Edge Software

We'll also throw in your choice of one of these Leading Edge Software Products FOR ONLY $9.95!

Leading Edge Word Processor With Merge & Spell Options

The Twin Lotus 1-2-3 Look-Alike

Nutshell Database Manager

See Our Other Ads For Details On These Products!

- Diablo 630 Compatible
- 40 CPS
- Parallel Interface
- Works With IBM, Apple, Kaypro, and Most Other Brands
- Optional Sheetfeeder and Tractorfeed

Why Such A Bargain?

This is a high quality 100% Diablo 630 compatible printer. It will work with just about all word processing software—since the Diablo 630 is the most standard word processing printer format there is. It uses Diablo ribbon cartridges and printwheels, so you can get supplies at any office supply store.

It was made by TEC and is mechanically "similar" to the C.Itoh Starwriter F10-40, made by the same manufacturer. It has a reputation as being one of the best printers made. So how can we sell it so cheaply?

The answer is simple—like many computer products, this printer was sold by one company to another company, which put its own label on it. In this case, TEC sold these printers to Commodore, which intended to sell them with an expensive business computer they were developing. The expensive computer took a lot longer to develop than Commodore anticipated—so they were stuck with these printers. Then they tried to sell them with their inexpensive computers—and you can imagine the result. How many people do you think would buy a printer with a list price of $1795 to go with a Commodore 64? You're right. Very few.

So we were able to acquire a great printer, made by a company known for its high quality printers, with only one drawback—the Commodore label on it, which falsely suggests that it is a low end printer.

However, the label can be a real advantage should your printer ever need service. Service is available not only at many dealers who repair C.Itoh and TEC printers, but also at all the hundreds of Commodore factory authorized service centers, located practically everywhere!

There is a 90 day factory warranty from Commodore. In addition, we guarantee you 100% satisfaction—no questions asked return within 15 days. What could be fairer?

100% Satisfaction Guarantee

Full 90 day warranty plus 15 day trial. If you are not completely satisfied for any reason, simply call within 15 days of receipt for a full refund.

Product #	Item	List Price	BCE Price	Shipping
LQ400-C10	Letter Quality Printer	$1795	$349	$22
LQ420-C10	Letter Quality Printer w/Tractorfeed	2044	468	27
LQ440-C10	Letter Quality Printer w/Sheetfeeder	2194	499	29
LQ460-C10	Letter Quality Printer w/Tractorfeed & Sheetfeeder	2443	599	34
CA200-C10	IBM Parallel Cable	35	19	FREE SHIPPING WITH PRINTER ORDER
CA250-C10	Centronics to Centronics Parallel Cable	35	19	

Quantity Discounts Available

Order Toll Free 1-800-545-7447

Or Send Check or Money Order to

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

© 1986 BCE

BCE

VISA MasterCard *Order Toll Free*

1-800-545-7447

Monday–Friday, 9 AM - 8 PM, EST

Ordering Information

Please specify Product Number when ordering. We ship UPS Ground anywhere in the continental USA. Allow three weeks shipping time. To return an item, call Customer Service (1-800-545-7447) for an authorization number. Quantities of all items are limited. Order Now!

LIQUIDATION!

Lowest Prices Anywhere!

BCE

Altos Liquidation!

UP TO 63% OFF LIST

Guaranteed Lowest Prices Anywhere!

586-40 w/Altos Label (ALTOS)	~~Mfr. List $9195.00~~	**$3795**
986-40 w/Altos Label and Xenix (ALTOS)	~~Mfr. List $11,195.00~~	**$4295**
586-40 w/CDC Label (ALTOS)		**$3395**
586-10 w/CDC Label (ALTOS)		**$1595**
8600-12 8086, 8" DSDD Floppy, 20 MB Fixed Drive (Demo) (ALTOS)		**$795**

All Units New In Factory Packaging (Except 8600).

Quantities Limited— Order Now!

100% Satisfaction Guaranteed!
If you are not satisfied with this computer for any reason, simply call to return it within 15 days of receipt for a complete refund.

Order Toll Free!
1-800-545-7447

Or Send Check Or Money Order To

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

© 1986 BCE

Product Information
1-202-944-3900, 9 AM - 8 PM, EST, M-F

Customer Service Inquiries
1-800-231-3549, 9 AM - 5 PM EST, M-F

VISA *Order Toll Free* MasterCard
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

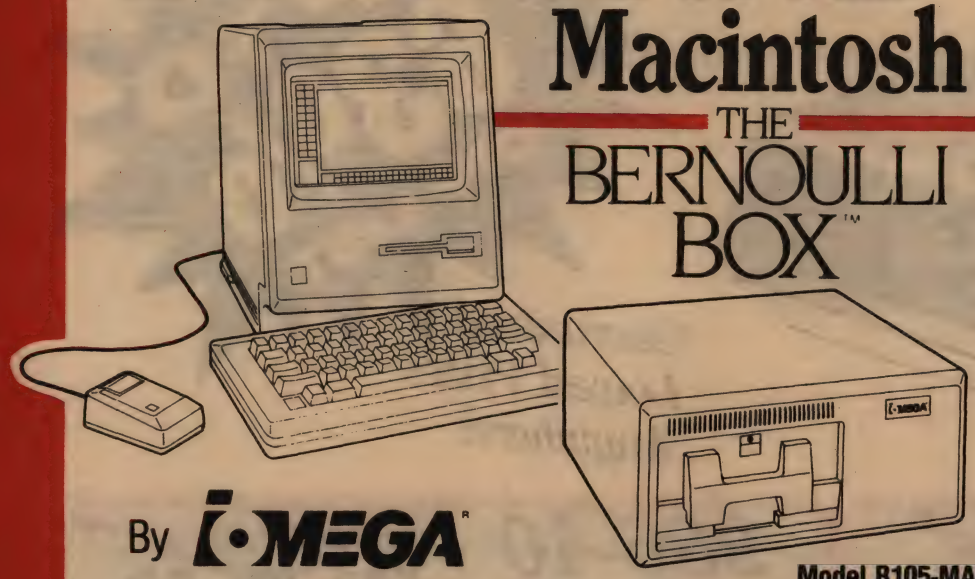
BCE

BCE LIQUIDATION!

Lowest Prices Anywhere!

Liquidation! For All Macintosh

THE BERNOULLI BOX™



70% OFF LIST

Mfr. Retail ~~$1995.00~~

Liquidation Price $599

By IOMEGA

Model B105-MAC

Unlimited Storage Capacity!

It's Like Having An Unlimited Supply of Removable 5 MB Hard Disks!

- Unlimited storage capacity (5 MB per Cartridge)
- More Resistant to Shock and Vibration Than Any Other Storage System, Fixed or Removable
- Use For Primary Storage, Backup Storage, Archival Storage or Software Loading
- Works With All Macintosh Models *(Interfaces for Mac Plus and Enhanced Mac Also Available—Call For Details!)*
- Plugs Directly Into The Macintosh Serial Port *(Printer Can Plug Into Bernoulli Box)*

SPECIAL OFFER

15 Meg Storage
Set of 3 5 MB Cartridges

Only $99
(regularly $59 each)

offer available only with purchase of Bernoulli Box

Specifications

Start/Stop Time: 5/10 seconds
Average Access Time: 50 ms
Capacity: 5 MB per cartridge
Size: 5.1"(H) x 10.7"(W) x 12.5"(D)

100% Satisfaction Guarantee

Full 90 day manufacturer's warranty from IOMEGA plus 15 day trial. If you are not satisfied with this product for any reason, simply call to return it within 15 days of receipt for a full refund.

Ordering Information

Product #	Item	Price	Shipping
BB105-C10	The Bernoulli Box For Macintosh	$599	$19
BB740-C10	Set of 3 Bernoulli Box Cartridges	$99	$7
BB960-C10	Extra Cartridges (more than 3) Each	$59	$7

Order Toll Free
1-800-545-7447

Or Send Check Or Money Order To

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

Quantity Discounts Available

© 1986 BCE

BCE

VISA Order Toll Free MasterCard
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

Ordering Information

Please specify Product Number when ordering. We ship UPS Ground anywhere in the continental USA. Allow three weeks shipping time. To return an item, call Customer Service (1-800-545-7447) for an authorization number. Quantities of all items are limited. Order Now!

LIQUIDATION!

Lowest Prices Anywhere!

BCE

Monitor Liquidation!

ONLY $49

Comparable Price ~~$89.00~~

12″ Composite Monitor *Made by* **Taigye**

- Works with IBM, Apple, etc.
- Amber Picture Tube—Reduces Eye Strain
- 40 or 80 Column Mode
- Graphics Capabilities
- Sharp Character Reproduction
- Front Mounted Control Panel—**On/Off, Contrast, Brightness, Vertical Hold, Horizontal Hold, Focus**

Specifications

Input Signal: 0.5–2V composite video
Video Bandwidth: 20MHz
Audio Output: 5W
Resolution: 800 lines at center
Picture Tube: 12″ 90 degree deflection amber anti-glare phosphor
Power Consumption: 30W
Dimensions: 14.4″(H) x 14.4″(W) x 14.75″(D)

100% Satisfaction Guarantee

60 day warranty from BCE plus 15 day trial. If you are not completely satisfied with this monitor for any reason, simply call to return it within 15 days of receipt for a complete refund.

Ordering Information

Product #	Item	Price	Shipping
CM004-C10	12″ Composite Monitor	$49	12

Order Toll Free
1-800-545-7447

Or Send Check Or Money Order To

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

© 1986 BCE

Product Information
1-202-944-3900, 9 AM - 8 PM, EST, M-F

Customer Service Inquiries
1-800-231-3549, 9 AM - 5 PM EST, M-F

VISA *Order Toll Free* MasterCard
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

BCE

LIQUIDATION!

Lowest Prices Anywhere!

BCE

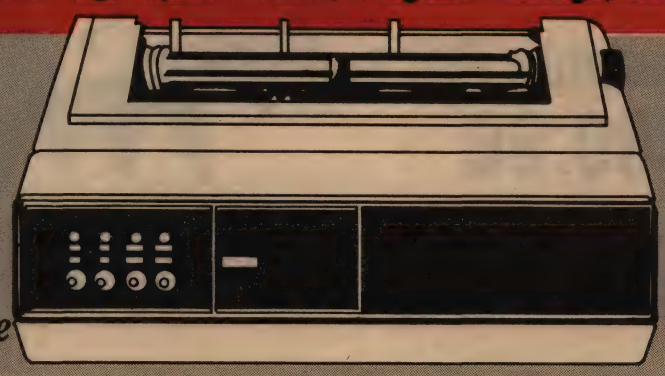
Printer Liquidation!

400 CPS Heavy Duty Printer

For High Speed Drafts, Program Listings, etc.

76% OFF LIST

180 Lines to 340 lines per minute



~~Mfr. Retail~~ **~~$2495.00~~**

Liquidation Price $599

Diablo P38

- 400 CPS Bi-Directional Printing
- High Reliability—No Maintenance Required, No Adjustments
- Long Life Ribbon
- Built-In Tractorfeed For Rear Or Bottom Paper Feed
- Parallel Interface

Specifications

Character Format: 7x7 matrix
Characters per second: 400± 5%
Lines per minute:

Characters per line	40	60	80	132
Lines per minute	340	260	220	140

Line Feed Speed: 55 msec, 8″ per second
Print Head: 14 pin design
Character Sets: Standard—96 Character ASCII; Selectable—7 National character sets selected via toggle switch.
Line Length: 132 characters
Buffer Capacity: 256 characters max.
Character Density: 10 CPI standard, 16.6 CPI compressed
Form Length: 3½″ to 14″, selectable via rotary switch
Line Density: Set via toggle switch, software overridable. Normal—6 LPI; Compressed—8 LPI
Ribbon Cartridge: Black, available in normal (2 million character life expectancy) and long life (8 million character life expectancy).
Paper: Fanfold paper, 3″ to 15″ fed from either rear or bottom of feed slots through width-adjustable tractors.
Copies: Original plus four copies (more if carbonless paper used). Multiple copy lever located inside printer case.
Power requirements: 120 VAC, 60 Hz, 170 Watts max, +10/-15%
Dimensions:

Size	22.0″(W) x 16.1″(D) x 8.2″(H)
Weight	39.5 lbs. (18 kg)

Print Sample

```
89 `abcdefghijk !!<=>?@ABCDEF
789 `abcdefghijk !!<=>?@ABCDE
6789 `abcdefghijk `!!<=>?@ABCI
56789 `abcdefghijk !!<=>?@ABC
456789 `abcdefghijk `!!<=>?@AI
3456789 `abcdefghijk !!<=>?@A
23456789 `abcdefghijk `!!<=>?
123456789 `abcdefghijk !!<=>
0123456789 `abcdefghijk `!!<=
/0123456789 `abcdefghijk !!<=
 /0123456789 `abcdefghijk `!!
&  /0123456789 `abcdefghijk `!
%&  /0123456789 `abcdefghijk `
$%&  /0123456789 `abcdefghijk
#$%&  /0123456789 `abcdefghijl
```

Ordering Information

Product #	Item	Price	Shipping
DP38-C10	Diablo P38 Printer	$599	$27
CA200-C10	IBM Parallel Cable	$19	FREE SHIPPING WITH PRINTER ORDER
CA250-C10	Centronics to Centronics Parallel Cable	$19	

100% Satisfaction Guarantee

Full 90 day manufacturer's warranty plus 15 day trial. If you are not satisfied with this printer for any reason, simply call within 15 days of receipt to return it for a complete refund.

Order Toll Free!
1-800-545-7447

Or Send Check Or Money Order To

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

Quantity Discounts Available

© 1986 BCE

Product Information
1-202-944-3900, 9 AM - 8 PM, EST, M-F

Customer Service Inquiries
1-800-231-3549, 9 AM - 5 PM EST, M-F

VISA *Order Toll Free* MasterCard
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

BCE

LIQUIDATION!

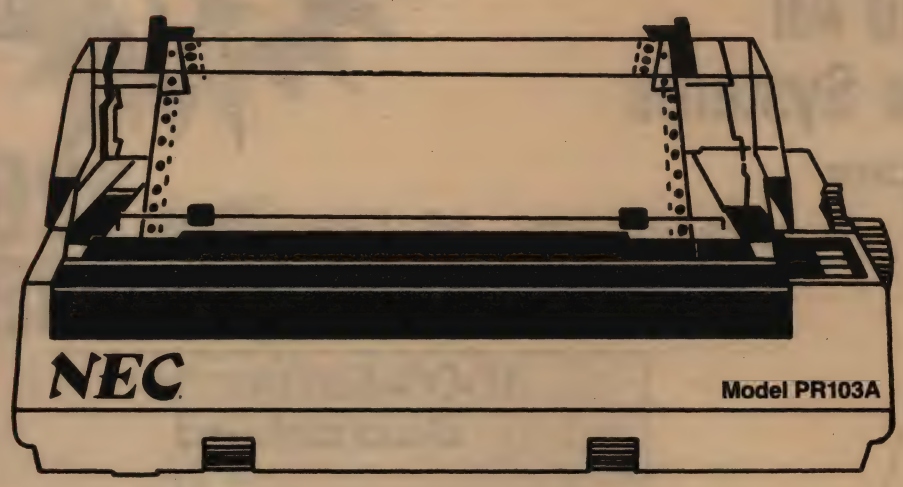
Lowest Prices Anywhere!

BCE

Printer Liquidation

NEC NLQ Printer

74% OFF LIST



~~Mfr. Retail~~
~~$499.00~~

Liquidation Price $129

• 110 CPS Draft, 40 CPS NLQ • Parallel Interface • Tractorfeed Included

Specifications

Printing Method Impact Dot Matrix
Print Head Impact Line Dot Type 16 Pins
Print Speed High Speed Pica: 92 cps; High Density Pica NLQ: 46 cps; Elite: 110 cps; Condensed: 78 cps
Printing High Speed Pica: 10 characters per inch; High Density Pica: 10 characters per inch; Elite: 12 characters per inch; Condensed: 17.1 characters per inch
Characters per Line High Speed Pica: 80; High Density Pica: 80; Elite: 96; Condensed: 137
Dot Composition High Speed Pica: 7x9; High Density Pica: 13x9; Elite: 7x7; Condensed: 7x9
Buffer Size 4K "Bit Image" type
Paper Feed Method Tractor or Friction Feed
Paper Types Cut Paper, Single Sheet, or Fanfold
Paper Width Cut—up to 10 inches; Fanfold—up to 10 inches
Paper Thickness Up to 0.10mm
Number of Copies One original plus two copies
Ink Ribbon Cartridge Type PC—PR103A-01; Color—Black; Life—1 million characters
Compatibility NEC 8023A—Same as Apple Graphics Printer and C.Itoh Proprinter *(Not fully graphics compatible)*
Interface Centronics, 8 bit parallel; works with IBM, Apple, Kaypro, etc.
Dimensions 13¾"(w) x 5½"(h) x 10"(d)
Weight 15.2 lbs.

Print Sample

```
This is a sample of the Near
Letter Quality print of the
NEC PR103A. It is certainly
the best of any printer in
this price range. It will
also print the character sets
of Germany, Japan, Sweden and
the United Kingdom.
1234567890-=!@#$%^&*()_+,./<>?
;':"[]{}~`
```

100% Satisfaction Guarantee

Full 90 day warranty from NEC plus 15 day trial. If you are not completely satisfied with this printer for any reason, simply call within 15 days of receipt to return it for a complete refund.

Ordering Information

Product #	Item	Price	Shipping
NC700-C10	NEC PR103A Printer	$129	$15
CA200-C10	IBM Parallel Cable	$19	FREE SHIPPING WITH PRINTER ORDER
CA250-C10	Centronics to Centronics Parallel Cable	$19	

© 1986 BCE

Order Toll Free
1-800-545-7447

Or Send Check or Money Order To

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

Quantity Discounts Available

Product Information
1-202-944-3900, 9 AM - 8 PM, EST, M-F

Customer Service Inquiries
1-800-231-3549, 9 AM - 5 PM EST, M-F

VISA MasterCard
Order Toll Free
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

BCE

BCE LEADING EDGE®

Leading Edge® Word Processor

For IBM and All Compatible Systems

ONLY $29

Lowest Prices Anywhere!

Basic & Simple Version — Mfr. Retail ~~$100.00~~ **$29**

With Spelling Checker and Merge/Print Options — Mfr. Retail ~~$250.00~~ **$39**

"The Leading Edge Word Processor offers the best balance of user friendliness, performance and features of all the programs tested."

Software Digest, January 1986.

Software Digest is an independent publication which accepts no advertising. Other programs tested included WordPerfect, Volkswriter Deluxe, WordStar 2000 Plus and Microsft World.

This program is a gem, and at $250, it's also a gem of a bargain.

—**PC Magazine, January 28, 1986**

100% Satisfaction Guaranteed

Unprecedented! We Trust You!

If you are not completely satisfied with this software after a 15 day trial, simply call us to return it for a complete refund.

Features:

- Automatically backs up your programs, even if you forget
- Makes two backup copies, not just one
- Splits screen for access to two documents at once
- Adds or deletes characters
- Recalls deleted characters if you change your mind
- Prints up to seven colors with compatible printers including IBM, Epson, Diablo, C.Itoh, NEC, Qume, Star Micronics.
- Underlines important words or phrases **on screen**
- Toll-free support line
- Marks ends of pages where you want them
- Prints boldface, double wide, italics, underscores, superscripts. and subscripts
- Comes complete with training disk and reference manual.
- Sets and resets margins and tabs
- Moves blocks of type
- Merges paragraphs
- Centers words, lines, and columns

Ordering Information

Product #	Item	Price	Shipping
LE999-C10	Basic & Simple Word Processor	$29	$5
LE888-C10	Word Processor with Spelling Checker and Merge/Print	$39	$5

Add $5 shipping and handling per item.

This price good through October 14, 1986. Offer may or may not be repeated next month.

A

Order Toll Free

1-800-545-7447

BCE Authorized Liquidators

3233 K Street, NW
Department C10
Washington, DC 20007

Quantity Discounts Available

© 1986 BCE

BCE

VISA *Order Toll Free* MasterCard

1-800-545-7447

Monday–Friday, 9 AM - 8 PM, EST

Ordering Information

Please specify Product Number when ordering. We ship UPS Ground anywhere in the continental USA. Allow three weeks shipping time. To return an item, call Customer Service (1-800-545-7447) for an authorization number. Quantities of all items are limited. Order Now!

LIQUIDATION!

Lowest Prices Anywhere!

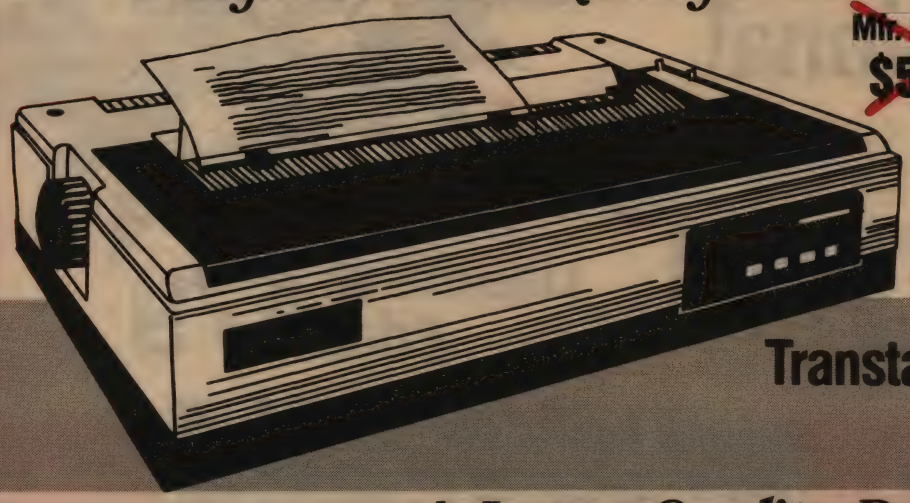
BCE

Printer Liquidation!

Daisywheel Letter Quality Printer

~~Mfr. Sug. Retail $550.00~~

72% OFF LIST



Transtar 120

ONLY $149

A Letter Quality Printer at a Dot Matrix Price!

- 14 CPS
- Automatic Paper Loading
- Parallel and Serial Models Available
- Works With Most Word Processing Software
- Lightweight and Portable
- 6 Month Warranty

Specifications

Print Speed: 14 characters per second *(cps) (Shannon Text)*
Print Method: fully formed daisy wheel characters
Character Set: ASCII 96-character, upper and lower case
Character Spacing: 10, 12, and 15 cpi, switch selectable
Horizontal Spacing: 1/20th-inch increments
Vertical Line Spacing: 1/48th-inch increments
Forms Width: 13 inches maximum
Line Feed Speed: 2 inches per second
Carriage Return Speed: 1200 ms per 10 inches
Ribbon: fabric or mylar *(single strike)* cartridge, Olivetti compatible
Printwheel: 96-character plastic daisy wheel, 10, 12, and 15 cpi
Interface: Model 120P: Centronics-compatible 8-bit parallel; Model 120S: EIA RS232 serial, supporting DTR, XON/XOFF or ETX/ACK protocol
Baud Rates: Model 120S: 300, 600, 1200, 2400, 4800, and 9600 bits per second *(switch selectable)*
Buffer Size: Model 120S: 1790 bytes
Parity: Model 120S: Even, Odd, None *(switch selectable)*
Code Compatibility: Plug and software compatible with Diablo 1610/1620 routines *(except two-color ribbon)* for full feature compatibility with leading word processing packages
Software Enhancements: Software selectable form length from 1 to 126 lines
Paper Thickness: Original plus 3 copies *(maximum)*
Automatic Paper Loading: Autoload function loads paper to one of four switch-selectable positions
Power Requirements: 120 VAC 60 Hz at 1.5 amps
Noise: 65 dB(A) or less
Dimensions: 17.5"(W) x 4.8"(H) x 12.4"(D)
Weight: 18.7 lbs.

Works With These Popular Word Processing Packages

WordStar
Word Perfect 4.1
R Word
R Office
Peach Text 5000 (Ver 2.1)
Free Word
Einstein Writer
PractiWord
Benchmark
NewWord 2 and 3

And Many More!

Ordering Information

Product #	Item	Price	Shipping
TS120S-C10	Transtar 120—Serial Model	$149	$17
TS120P-C10	Transtar 120—Parallel Model	$149	$17
CA200-C10	IBM Parallel Cable	$19	FREE SHIPPING WITH PRINTER ORDER
CA250-C10	Centronics to Centronics Parallel Cable	$19	

100% Satisfaction Guarantee

Full 6 month manufacturer's warranty plus 15 day 100% satisfaction guarantee. If you are not completely satisfied with this printer for any reason, simply call to return it within 15 days for a full refund.

Order Toll Free

1-800-545-7447

Or Send Check or Money Order To

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

Quantity Discounts Available

A

© 1986 BCE

Product Information
1-202-944-3900, 9 AM - 8 PM, EST, M-F

Customer Service Inquiries
1-800-231-3549, 9 AM - 5 PM EST, M-F

VISA *Order Toll Free* MasterCard

1-800-545-7447

Monday–Friday, 9 AM - 8 PM, EST

BCE

BCE LIQUIDATION!

Lowest Prices Anywhere!

Attention Apple Users:

WordStar Professional

plus

Appli-Card CP/M Board

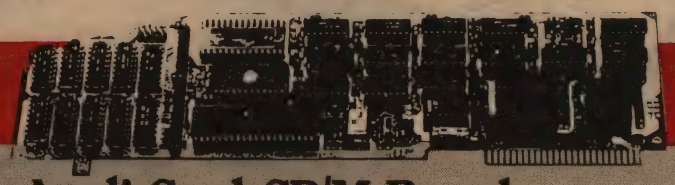
For Apple II, IIe and II+

~~Mfr. Retail $880.00~~

91% OFF LIST

Liquidation Price $79

LOOK AT ALL YOU GET:



Appli-Card CP/M Board

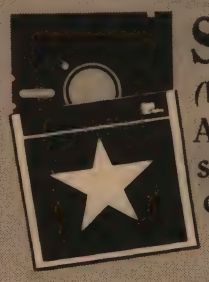
Made by PCPI, also sold as StarCard

Best on the market! Includes CP/M 2.2, Z80B processor, 6 MHz, 70 column display without an 80 column card (or 80 columns with an 80 column card).

WordStar

(Version 3.33)

The industry standard word processor.



SpellStar

(Version 3.3)

Allows you to check spelling using 20,000 word dictionary.

MailMerge

(Version 3.3)

Creates mailing lists, merges files.

StarIndex

(Version 1.01)

Creates indices and tables of contents.

Packages Also Available Separately

WordStar Professional	ONLY $49
AppliCard CP/M Board	ONLY $49
SpellStar	ONLY $29
MailMerge	ONLY $29
StarIndex	ONLY $29

Add $8 per item shipping and handling.

100% Satisfaction Guarantee

One year warranty from MicroPro plus 15 day trial. If you are not satisfied with this software for any reason, simply call to return it within 15 days of receipt for a complete refund.

Order Toll Free
1-800-545-7447

Send check or money order or charge

BCE Authorized Liquidators
3233 K Street, NW
Department C10
Washington, DC 20007

© 1986 BCE

BCE

VISA Order Toll Free MasterCard
1-800-545-7447
Monday–Friday, 9 AM - 8 PM, EST

Ordering Information

Please specify Product Number when ordering. We ship UPS Ground anywhere in the continental USA. Allow three weeks shipping time. To return an item, call Customer Service (1-800-545-7447) for an authorization number. Quantities of all items are limited. Order Now!

QUALITY PRICES SERVICE

NAKAI

HAS THE BEST!!

Nakai Offers you 1 year Manufacturer's Warranty on its 4 layer Boards compared to 90 days Warranty Offered by many of Other Distributors.

- **Computer Soldered Board**
- **4 Layer Board**
- **1 Year Manufacturer's Warranty**

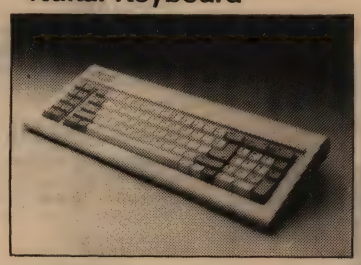
Nakai Basic System

- A Nakai Computer Case
- A Keyboard
- A 150 Watts Switching Power Supply
- PU Packaging equal to IBM

Nakai Case

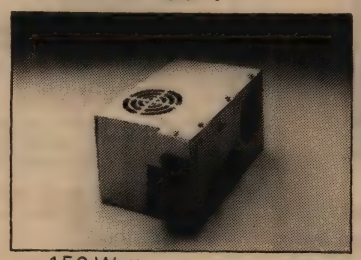
- Flip Top or Slide in
- Same Dimensions as PC/XT

Nakai Keyboard



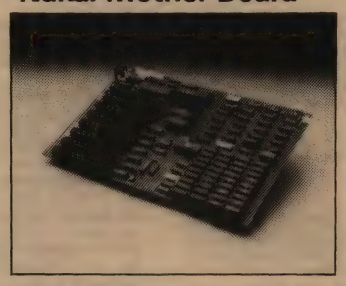
- PC/XT Compatible
- By Cherry of West Germany Or
- By Misumi of Japan
- Large Return and Shift Keys
- LED for Capital and Number Look

Nakai Switching Power Supply



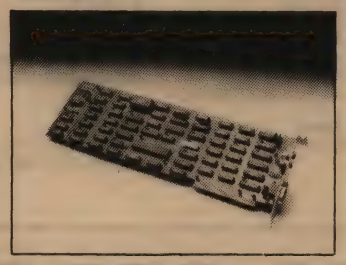
- 150 Watts
- Side Switch
- 4 Floppy Power Plugs

Nakai Mother Board



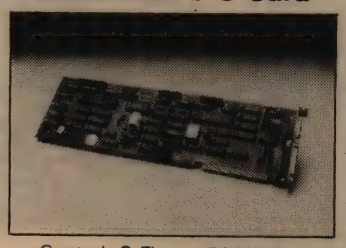
- 256 K Expandable to 640K on Board
- 4 Layer PC Board (Equal to IBM)
- (CPU) 4.77 or 8 MHZ user selectable 8087 Co-Processor Optional
- 8 Expansion Slots

Nakai Color Graphic Card



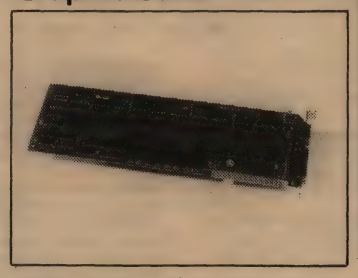
- RGB Color, Composite, Monochrome Composite
- 4 Layer PC Board
- Text Mode: 40 Column x 25 Row 80 Column x 25 Row
- Graphic Mode: 320 Dot x 200 Line (Color, Black & White) 640 Dot x 200 Line (Black & White)
- Attribute: Reverse Video Blanking & High Light

Nakai Multi I/O Card



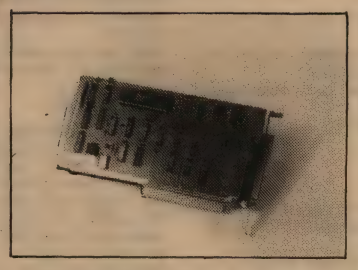
- Controls 2 Floppy Disk Drives
- 4 Layer PC Board
- 1 Parallel Port
- 2 Serial Ports (1 Optional)
- Real Time Clock/Calendar
- Game I/O Port

Nakai Monochrome Graphic Card



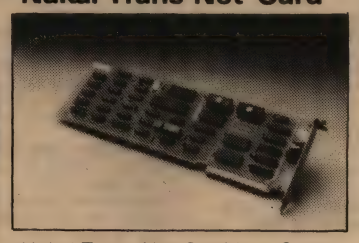
- With Parallel Printer Port
- Resolution: 720 x 348
- 4 Layer PC Board

Nakai Disk Controller Card



- Controls 4 Disk Drives
- (2 internal and 2 external) 4 Layer PC Board

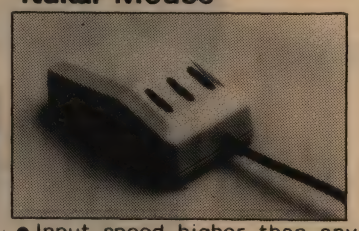
Nakai Trans-Net Card



Nakai Trans-Net Card is a Comprehensive, High Performance, Low-Cost, and Easy-to-Use Local Area Network (LAN) for IBM PC/XT and Compatibles.

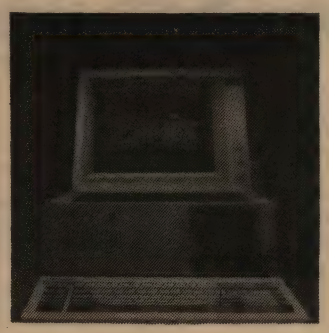
Nakai Trans-Net Local Area Network Transfers Data at 1 Million Bits Per Second Over A Twisted Pair Wire Cable Up to 4,000 Feet in Length, and as Many as 255 PCs can be Interconnected within A Network.

Nakai Mouse



- Input speed higher than any devices
- No traditional grilled pad required
- Without using power supply adaptor
- No operating space limit
- MS MOUSE Compatible.

$69.00



RGB Multi Display Color Monitor MD-3 Multi Display

- 14" screen
- Band width: 14 MHZ
- Resolution: 640 dots horizontal, 240 scan lines

MD-7 EGA Multi Display

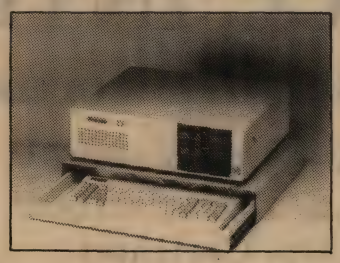
- 14" screen
- Band width: 20 MHZ
- Resolution: 720 dots horizontal, 350 lines

Accessories

DX-100B Diskett Box

- Double Row Display Filing System
- Smoked PS plastic Cover with Lock
- High Impact Plastic Lid and Base
- Easy Access Handle for Opening and Carrying
- Protect Up to 100 5¼" Diskettes **$14.00**

DT-21 DT Easy Drawer



Computer & CRT are supported by baked enamel, reinforced 20 gauge steel platform. The cantilever drawer, supported by ball bearing slides, holds a keyboard up to 2-¾"(h) x 19-¾"(w) x 9-½"(d), and extends to a lock position. **$39.00**

User's Minimum order $50.00

NAKAI

Z-NiX COMPANY, INC.

9537 Telstar Ave., Suite #121
El Monte, Ca. 91731

DEALERS' INQUIRIES WELCOME • PHONE (818) 575-3700

IBM and IBM PC/XT are Registered Trademark of IBM Corp.

Users Groups

LIST YOUR CLUB'S NAME AND ADDRESS COMPLIMENTS OF *COMPUTER SHOPPER*

Write: P.O. Box F, Titusville, FL 32781

USER GROUPS

The User Groups Section is a regular feature of *Computer Shopper*. This is where you can list your club's address at no charge. User Group listings are in state sequence. If you would like to have your club listed, follow the instructions listed below:

User Group Submission Policy

All User Group entries must be submitted in writing by the first Monday of every month. **Submissions received by the fist Monday of August will appear in the October issue.** The listing will be good for three issues thereafter. After this period they will be deleted unless we receive a post card or letter confirming the board is active. It is the responsibility of the person who submitted the listing to mail all corrections, updates, and deletions to *Computer Shopper*. Remember, if you do not let us know when your club is inactive, it will be listed until deleted.

Send all correspondence to:

Computer Shopper
User Groups
P.O. Box F
Titusville, FL 32781

We are not responsible for errors published in these listings.

ALABAMA

BIRMINGHAM ATARI COMPUTER ENTHUSIASTS, 4424 FIFTH AVENUE, BIRMINGHAM, AL 35222
C.A.T.I. 99/4A UG P.O. BOX 11751, MONTGOMERY, AL 36111 205-288-3698
HACKS NEWSLETTER, P.O. BOX 14356, HUNTSVILLE, AL 35815
HUNTSVILLE ALABAMA COMMODORE KOMPUTER SOCIETY (HACKS), P.O. BOX 14356, HUNTSVILLE, AL 35815
MICROPOLIS/VECTOR GRAPHIC USERS GROUP, 604 SPRINGWOOD CIRCLE, HUNTSVILLE, AL 35803-1740; (205) 881-1697
THE MOBILE COLOR SIG, c/o STEVE POATES, 2056 SOUTH McVAY DRIVE, MOBILE, AL 36605; (205) 473-1049
MOBILE KAYPRO USERS GROUP, 7230 TARA DRIVE SOUTH, MOBILE, AL 36619
SOUTH ALABAMA USERS GROUP (SAPPLE), PO BOX 8894, MOBILE, AL 36608-0894
SMAUG, 1520 RIDGELAND ROAD EAST, MOBILE, AL 36609
VISUAL COMMUTER USER GROUP c/o RAY DOBBS, 4907 ALBERTA ROAD, HUNTSVILLE, AL 35816-1103

ALASKA

ARIZONA

ADAM 2 APPLE USERS GROUP, P.O. BOX 34056, PHOENIX, AZ 85067; (602) 277-8511
DOUGLAS COMPUTER USER'S GROUP, P.O. BOX 544, DOUGLAS, AZ 85608; (602) 364-9604
SUNHUG HEATH USERS GROUP, c/o E.R. ROGERS, 4860 S. ROSETTE PL., TUCSON, AZ 85730
TUCSON COLOR COMPUTER CLUB, 9631 E. STELLA ROAD, TUCSON, AZ 85730

ARKANSAS

ARKANSAS SOFTWARE LENDING LIBRARY, (IBM-PC) c/o L. BLAND, P.O. BOX 1837, CONWAY, AR 72032; (501) 329-6933 (24 hours)
COMMODORE INFORMATION ASSOCIATION (C.I.A.), P.O. BOX 1755, CONWAY, AR 72032
WEST HELENA MICRO-COMPUTER USER'S GROUP, P.O. BOX 2184, WEST HELENA, AR 72390

CALIFORNIA

ARTISTS COLLABORATIVE FOR FUTURISTIC UNITED ACHIEVEMENTS P.O. BOX 161815, SACTO, CA 95816
A.V. ATARI, 44746 SARAH LANE, LANCASTER, CA 93535-2834; (805) 946-2125
CIVIC64, P.O. BOX 2442, OXNARD, CA 93034-2442
COLLABORATIVE STEPS P.O. BOX 163777, SACRAMENTO, CA 95816
DAVIS PC USERS GROUP POST OFFICE BOX 2249, DAVIS, CA 95617-2249; (916) 756-6838
HERITAGE HACKERS P.O. BOX 163777, SACRAMENTO, CA 95816
IBM XT CLONE USER GROUP, 431 ASHBURY STREET, SAN FRANCISCO, CA 94117
LE SIG 148 SOUTH ALMONT DRIVE, BEVERLY HILLS, CA 90211
LOS ANGELES AMIGA USERS GROUP, c/o BILL SIMPSON, 1711 ALTIVO WAY, LOS ANGELES, CA 90026; (213) 661-7959
OASIS USER GROUP, P.O. BOX 2400, SANTA BARBARA, CA 93120; (805) 965-0265
PACIFIC COMPUTER CLUB, c/o NORMAN SAUPPE, 1625 PEGFAIR DRIVE, PASADENA, CA 91103; (818) 792-9840
SAN LEANDRO APPLE EATERS USERS GROUP, c/o BOB SHAYLER, 2200 BANCROFT AVENUE, SAN LEANDRO, CA 94577
SACRAMENTO IBM PERSONAL COMPUTER USERS GROUP, 6941 LE HARVE WAY, CITRUS HGTS., CA 95610
SACRAMENTO PC USERS GRUP, P.O. BOX 685, CITRUS HEIGHTS, CA 95610; (916) 332-1944
SAN LEANDRO APPLE EATERS USERS GROUP, c/o BOB SHAYLER, 2200 BANCROFT AVE, SAN LEANDRO, CA 94577
SANTA MARIA/LOMPOC ATARI COMPUTER ENTHUSIASTS (SMLACE), P.O. BOX 2286, SANTA MARIA, CA 93454
SANYO MBC-2000/3000 COMPUTER CLUB, c/o RIVER CITY DATAMATION, 2653 YUMA CIRCLE, SACRAMENTO, CA 95827
SCPCUG P.O. BOX 7656 FREMONT, CA 94537-7656
SLO BYTES IBM PC USER'S GROUP c/o BOB WARD, 2100 ANDRE' AVENUE, LOS OSOS, CA 93402
SOUTH BAY COMPUTER EDUCATION GROUP, (APPLE, ATARI, COMMODORE, IBM, TI 99/4a, 3675 TORRANCE BLVD., SUITE 202, TORRANCE, CA 90503
TECHNICAL USERS GROUP, P.O. BOX 705, VAN NUYS, CA 91408-0705
THEOS OASIS USER GROUP, P.O. BOX 2400, SANTA BARBARA, CA 93130; (805) 965-0265

COLORADO

COLORADO COMMODORE COMPUTER CLUB, 11855 ADAMS STREET, NORTHGLENN, CO 80233; (303) 450-2779
COMPUTER C.A.C.H.E., 8692 E. HAMPDEN AVENUE, P.O. BOX 255, DENVER, CO 80231-4995
DEC RAINBOW USERS GROUP, 2993 S. PEORIA, SUITE #390, AURORA, CO 80014; (303) 671-0800
GRACE (ATARI COMPUTER USERS), 1009 42ND STREET #5, EVANS, CO 80620
TAWUG, P.O. BOX 24869, DENVER, CO 80222
TEXAS INSTRUMENT CLUB 2440 25th AVENUE, GREELEY, CO 80631

CONNECTICUT

CONNECTICUT COMPUTER SOCIETY, MONTEVIDEO ROAD, AVON, CT 06001
NEC APC OF GREATER HARTFORD P.O. BOX 1014, GLASTONBURY, CT 06033
TANDY 2000 SOFTWARE SWAPPERS, 387 MAIN STREET, WESTPORT, CT 06880
TRITOWN PCjr USERS GROUP, 100 SENECA ROAD, BRISTOL, CT 06010
WOODBURY COMPUTER CLUB, c/o WOODBURY LIBRARY, MAIN STREET, WOODBURY, CT 06798

DELAWARE

THE DELAWARE COLOR COMPUTER USERS GROUP, c/o TOBIAS L. FOWLER, P.O. BOX 78, MIDDLETOWN, DE 19709; (302) 378-2555
FRANKLIN/APPLE USERS GROUP, c/o SOFTWARE KINGDOM, INC., 512 N. DUPONT HWY., DOVER, DE 19901; (302) 736-6613
PC USERS GROUP, (IBM) c/o SOFTWARE KINGDOM, INC., 512 N. DUPONT HWY., DOVER, DE 19901; (302) 736-6613

DISTRICT OF COLUMBIA

CP/M USERS GROUP OF WASHINGTON DC, P.O. BOX 891, WASHINGTON, DC 20044-0891; (301) 495-6690

FLORIDA

ADAM USER GROUP, 4757 #B, SUNNY PALM CIRCLE, WEST PALM BEACH, FL 33415
APPLE COMPUTER ENJOYMENT SOCIETY, P.O. BOX 291557, FT. LAUDERDALE, FL 33329
COMPUTER CONNECTION, P.O. BOX 2101, FT. WALTON BEACH, FL 32549
FWB APPLE USERS GROUP c/o 203 DEVON CT., WRIGHT, FL 32548-3110
G.A.P. 6330 SW 13TH STREET, GAINESVILLE, FL 32608; (904) 372-2944
GAINESVILLE APPLE PEELERS, 6330 SW 13th STREET, GAINESVILLE, FL 32608
GREATER ORLANDO 99ERS USER GROUP P.O. BOX 1381, MAITLAND, FL 32751
M.I.C.E. (MIAMI INDIVIDUALS WITH COMMODORE EQUIPMENT), 11110 BIRD ROAD, MIAMI, FL 33165
N.O.R.A.D. P.O. BOX 680116, MIAMI, FL 33168
PC USERS GROUP OF BOCA RATON, P.O. BOX 273421, BOCA RATON, FL 33427
PINELLAS IBM-PC USERS GROUP, 3401 GANDY BLVD. LOT #628, PINELLAS PARK, FL 33565; (813) 576-2608
RAM ROM 84 COMPUTER USER GROUP P.O. BOX 1369, ENGLEWOOD, FL 34295-1369
SARASOTA-MANATEE MACINTOSH USERS GROUP, P.O. BOX 25134, SARASOTA, FL 33579
SOUTHWEST TECHNICAL PRODUCTS 6800 USERS GRUP, 110 DORY ROAD NORTH, N.P.B., FL 33408
SPACE COAST AMIGA USER'S GROUP, P.O. BOX 2098, MERRITT ISLAND, FL 32952
SPACE COAST APPLE USERS GROUP, INC., P.O. BOX 2112, MERRITT ISLAND, FL 32952-2112
TAMPA UNIX USER'S GROUP, UNIVERSITY OF SOUTH FLORIDA, 4202 E. FOWLER AVENUE, TAMPA, FL 33620

GEORGIA

ADBUS, ATLANTA DATA BASE USER SOCIETY, P.O. BOX 19913, ATLANTA, GA 30325
THE AGUSTA SANYO USERS GROUP, c/o JACK E. HOBBS, PRESIDENT, 3008 CLAUDIA DRIVE, AUGUSTA, GA 30906; (404) 793-3406
CSRA COMPUTER SOCIETY, P.O. BOX 284, AUGUSTA, GA 30903

HAWAII

IDAHO

POCATELLO TI 99ERS USERS GROUP, c/o T.S. TAUSCHER, 4990 WILDFLOWER, POCATELLO, ID 83204; (208) 233-2282

ILLINOIS

CACHE, CHICAGO AREA COMPUTER HOBBYIST EXCHANGE, 323 S. FRANKLIN #804, BOX C-176, CHICAGO, IL 60606
CIA USER GROUP, P.O. BOX 1462, PEORIA, IL 61602
METRO EAST COMPUTER ASSOCIATION, c/o D. WARREN, P.O. BOX 1569, EDWARDSVILLE, IL 62024
MICROCOMPUTER USERS GROUP, c/o SEAN PARHAM, R4, BOX 308, ROBINSON, IL 62454
MT. VERNON COMMODORE USER GROUP c/o RICK VAN MATRE, 3200 MULBERRY, MT. VERNON, IL 62864
NATIONSERV USERS GROUP, P.O. BOX 391, FAIRFIELD, IL 62837
PROGRESSIVE ATARI COMPUTER, (P.A.C. USER GROUP), c/o NETWORK: ATARI, P.O. BOX 196, RANTOL, IL 61866-0196
SANYO & MS-DOS USERS GROUP (SMUG), c/o RUSS STAKER, 2201 HIGHWOOD, PEKIN, IL 61554
STING c/o DAVE STAMBAUGH, 109 FLORIDA AVENUE, WASHINGTON, IL 61571
TANDY RADIO SHACK COMPUTER USERS SIG 80 GROUP, 6720 PALMA LANE, MORTON GROVE, IL 60053
WIPUG C/O EDWARD L. MILLS, RTE 5 BOX 75, QUINCY, IL 62301
W.W. 99ERS, (T.I. 99/4A USERS GROUP), c/o MARC C. LEVINE, PRESIDENT, 1901 SUMMIT DRIVE, URBANA, IL 61801

INDIANA

ELKHART PC USER GROUP, 59312 PARK SHORE DRIVE, ELKHART, IN 46517
INDIANA SINCLAIR TIMEX USERS GROUP 513 EAST MAIN STREET, PERU, IN 46970; (317) 473-4885
LOGANSPORT COMMODORE CLUB, 2329 MYERS LANE, LOGANSPORT, IN 46947
THE THREE RIVERS COLOR COMPUTER CLUB, R.R. #3, BOX 269, ANGOLA, IN 46703
WEST INDY COMPUTER ALLIANCE ATARI CLUB c/o RANDALL C. JORDAN, 3640 MIDDLEFIELD DRIVE, APARTMENT D, INDIANAPOLIS, IN 46222

IOWA

KANSAS

FORT LEAVENWORTH ATARI GROUP, P.O. BOX 3233, FORT LEAVENWORTH, KS 66027-0233

KENTUCKY

OWENSBORO MICROCOMPUTER USERS GROUP, 1841 BONNIE CASTLE DRIVE, OWENSBORO, KY 42301

LOUISIANA

ACADIANA COMMODORE COMPUTER CLUB, P.O. BOX 31412, LAFAYETTE, LA 70503
NEW ORLEANS ATARI USERS GROUP, 5630 JEFFERSON HIGHWAY, HARAHAN, LA 70123
WBUG P.O. BOX 740854, NEW ORLEANS, LA 70174-0854

MAINE

MAINE MACINTOSH OWNERS AND OPERATORS SOCIETY (MMOOS), c/o MIKE RODERICK, PICKARD THEATER, BOWDOIN COLLEGE, BRUNSWICK, ME 04011; (207) 725-8731 ext. 5344

MARYLAND

CARROLL BITS USERS GROUP, (APPLE) 4001 LONDON BRIDGE RD., SYKESVILLE, MARYLAND 21784
POPNET -2, RST ENTERPRISES INC., 28B S. FREDRICK AVENUE, SUITE 5, GAITHERSBURG, MD 20877; (301) 840-8089

MASSACHUSETTS

MASSACHUSETTS ELECTRONIC MESSAGE OPERATORS (MEMO), P.O. BOX 3336, FALL RIVER, MA 02722-3336
MEMO COMPUTER CLUB P.O. BOX 3336, FALL RIVER, MA 02722-3336

MICHIGAN

DETROIT FIRST OSBORNE USERS GROUP, 20005 AVDETTE, DEARBORN, MI 48124; (313) 274-4327
MAC-IN-AWE PERSONAL APPLE CLUB, GRACE A. DOW PUBLIC LIBRARY, 1710 W. ST. ANDREWS RD., MIDLAND, MI 48640
TIDEAS USER'S GROUP, 3890 HERMANSAU ROAD, SAGINAW, MI 48603

MINNESOTA

MSP 99 USERS GROUP, PO BOX 12351, ST. PAUL, MN 55112

MISSISSIPPI

JACKSON COUNTY USERS GROUP (JCUG), 4606 EARL BLVD., MOSS POINT, MS 39563; (601) 475-4100 or (601) 769-4612

MISSOURI

APPLE CPU/MUSE, P.O. BOX 811, COLUMBIA, MO 65205
THE KC SOUTH COMPUTER CLUB c/o BILL BAKER, 2419 QUEEN RIDGE DRIVE, INDEPENDENCE, MO 64055; (816) 252-3616
OZARK 99ER USER'S GROUP, 2956 S. BARNES, SPRINGFIELD, MO 65804

MONTANA

NEBRASKA

THE GREATER OMAHA COMMODORE USERS GROUP, P.O. BOX 241155, OMAHA, NE 68124

NEVADA

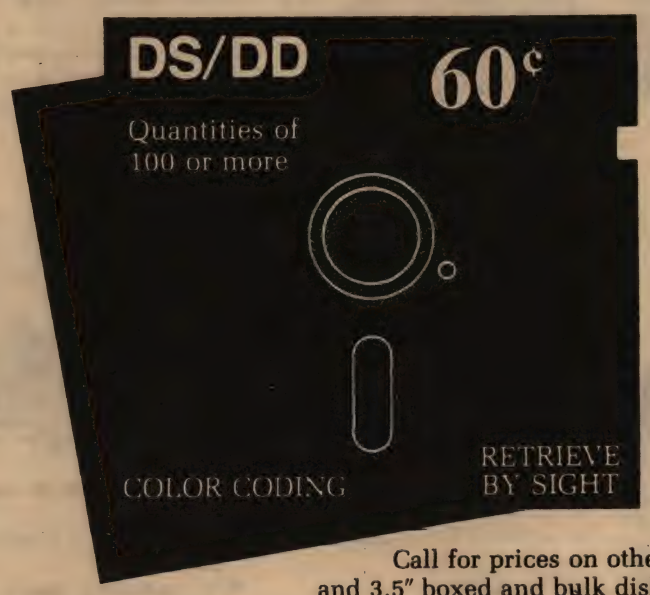
NEW HAMPSHIRE

THE NORTHCOAST 99ERS P.O. BOX 2283, EUCLID, OH 44123-0283; (216) 357-7274

NCC INTRODUCES COLOR

IN 8-10 VIVID COLORS

- Lifetime Warranty
- U.S. Manufacturer
- 100% Certified
- Includes Tyvek Sleeve
- Reinforced Hub
- Write Protects
- Includes Labels



5% Discount on First Order

408 496-1022

1 (800) 245-3111

CONSISTENT QUALITY
CONSISTENT LOW PRICES **SAME DAY SHIPPING**

Call for prices on other 5.25 and 3.5" boxed and bulk diskettes.
Dealer inquiries welcome.
Authorized Xidex/Dysan Distributor

Larger Quantities Mean Lower Prices! Duplicating Services Available

National Computer Consulting Inc. • 3375 Scott Blvd. Suite 422 • Santa Clara, CA 95054

COMPUTER EXPERT INC.

1501 BROADWAY, NEW YORK, N.Y. 10036
TEL : (212) 840-7871

DEALER INQUIRY WELCOME

XT COMPATIBLE
P'S 16 TURBO $759

P'S 16 TURBO
- 8088-2 Processor
- 8 slots
- AT style Keyboard
- 256 KB Expandable to 640
- 2 Panasonic or Teac Drive
- 150W Power Supply
- Switchable 4.77 & 8MHZ
- 4 Layer Mother Board
- Monitor Adapter

AT COMPATIBLE
P'S T16 STANDARD MODEL
$1395.00

FCC APPROVED

P'S T16 Specification:
- 80286 True 16 Bit Microprocessor
- Expandable to 1 MB on Board (512k installed)
- 8 Expansion Slot (6-16 bit, 2-8 bit)
- 84 Keys Keyboard (same Layout as IBM)
- Optional 80287 Math Coprocessor
- DTC Hard Disk & Floppy Controller
- 1.2 MB Floppy Drive
- 200W Power Supply
- Award BIOS

IBM COMPATIBLE PARTS SPECIAL

XT Parts Special:

Turbo Mother Board 4 Layers(8MHZ,4.77MHZ).....$169
XT Case (slide out).....$59
XT Power Supply 150W.....$99
2MB RAM Card (Intel Above Board EMS Comp)..(OK)$169
512K RAM Memory Card.....(OK) $59
Multifunction Card.....(OK) $89
AT Style Keyboard 5060.....$99
Disk Drive Controller.....$39
DTC Hard Disk Controller.....$139

Printers: Okidata 192 IBM.....$339
Okidata 193 IBM.....$489
Star SG-10.....$219
Panasonic KX-1091.....$249
Toshiba P-321.....$479
Brother HR-15XL.....$329
Monitors: Princeton MAX-12.....$159
Princeton HX-12.....$419

Sales of P'S 16 Turbo subject to FCC Approval

TERMS:
CREDIT CARD subject to verify. Please add U.P.S. ground shipping plus handling are additional. Express available at additional cost. N.Y. state residents please add 8.25% sales tax. Master/Visa please add 3% surcharge. Prices subject to change without notice. Not responsible for typographical errors.

AT, XT are trademark of International Bussiness Machine Corp.

AT PART SPECIAL:

AT 1.2 MB floppy drive $139
AT 360KB Drive.....$99
AT 3MB RAM Card.....$159
AT Case.....$99
AT Hard Disk & Floppy Controller (DTC).....$269
Seagate 20MB Hard Disk For AT (1/2 Height).....$349
Seagate 30MB Hard Disk For AT (Full Height)....$599
AT Keyboard.....$99
AT Mother Board with AWARD BIOS.....$659
AT Multifunction Card 3MB Parallel,Serial..(OK)$189
AT Parallel & Serial Card.....$79
AT Power Supply 200W.....$149

Other Parts:
Color Graphic Card $75
Color Card with Printer Port.....$85
MonoGraphic /Printer Adapter (Hercules Comp.)...$99
EPROM writer card with Software & Manual.....$109
Mouse.....$79
Game Card.....$25
Joystick (for IBM).....$20
Modem 1200B Internal (Hayes Comp.).....$139
Modem 1200 External (Hayes Comp.).....$169
Printer Cable.....$8
Modem Cable.....$8
Printer A-B Switch.....$49
TTL Hi Res Monochrome Monitor.....$109
RGB Monitor.....$299

PENNSYLVANIA DIRECT AGENCY Tel (412) 856-7621
CALIFORNIA AGENCY Tel (408) 984-6247

Users Groups

SOUTHERN NEW HAMPSHIRE APPLE CORE P.O. DRAWER 3647, NASHUA, NH 03061

NEW JERSEY

ATLANTIC USERS GROUP, c/o CHRIS RICE, 20 OAK LANE, CARDIFF, NJ 08232
JERSEY ATARI COMPUTER GROUP, P.O. BOX 356, WHITE HOUSE STATION, NJ 08889
JERSEY ATARI COMPUTER SOCIETY, P.O. BOX 710, CLEMENTON, NJ 08021
MERCER COUNTY COMPUTER CLUB, c/o Richard C. Kelly, 1904 COUNTRY LA., W. TRENTON, NJ 08628
NEW JERSEY APPLE JACK, c/o LEANNA POVILAITIS, BOX 634, MADISON, NJ 07940

NEW MEXICO

APPLEQUERQUE COMPUTER CLUB, P.O. BOX 35508, ALBUQUERQUE, NM 87176

NEW YORK

AARON COMMODORE USER GROUP, c/o JUSTIN L. BLOCKER, HHD AFCENT SUPACT (US), BOX #2881, APO, NY 09011
ATARI/FORDHAM USERS GROUP (AFUG), C/O N. LOMBARDI LOYOLA HALL, FORDHAM UNIVERSITY, BRONX, NY 10456
CAPITAL DISTRICT ATARI COMPUTER ENTHUSIASTS, P.O. BOX 2216, ALBANY, NY 12206
COMMODORE USER CLUB, P.O. BOX 2499, APO, NY 09130
COMPUTERS ANONYMOUS, APPLE, ATARI, COMMODORE, IBM, KAYPRO AND RADIO SHACK USERS, c/o RIC RUBIO, PSC BOX 1499, APO, NY 09289-5364
FHAUG c/o JOEL LEVIN, 101-06 67TH DRIVE, FOREST HILLS, NY 11375
HUDSON VALLEY 99/4A USERS GROUP, c/o BRETT KROPF, RD 1, BOX 359-5, KINGSTON, NY 12401; (914) 336-6144
HUDSON VALLEY PC CLUB, BOX 6057, KINGSTON, NY 12401
INTEGRITY COMPUTER CLUB, 558 BRECKENRIDGE ST., BUFFALO, NY 14222
METROPOLITAN LIFE COMMODORE USERS SIG, P.O. BOX 1543, MURRAY HILL STATION, NEW YORK, NY 10156
ROCHESTER APPLE CIDER, P.O. BOX 40562, ROCHESTER, NY 14604
SINCLAIR COMPUTER USERS SOCIETY SINCUS, P.O. BOX 36, JOHNSON CITY, NY 13790
SOUTHERN TIER APPLE CORE (STAC), C/O EARLE NAUMANN, ELY PARK APT. X-4, BINGHAMTON, NY 13905; (607) 729-0708
TWIN Tlers USERS GROUP, C/O ROSE J. SASS, ROCK STREAM, NY 14878
WESTCHESTER PC USER GROUP, P.O. BOX 54, YORKTOWN HEIGHTS, NY 10598
WW STUG, 77 KENTON PLACE, HAMBURG, NY 14075
ZWEIBRUCKEN COMMODORE COMPUTER CLUB, BOX 235, 200TH TAMMC, APO, NY 09052

NORTH CAROLINA

CHARLOTTE ATARI USERS GROUP, 5911 BROOKHAVEN ROAD, CHARLOTTE, NC 28210; (704) 568-6213

NORTH DAKOTA

FM/99ERS, BOX 2014, FARGO, ND 58107

OHIO

ACORN, GREATER CINCINNATI IBM PC USERS GROUP, c/o R. REDING, P.O. BOX 3097, CINCINNATI, OH 45201
CINTUG P.O. BOX 399145, CINCINNATI, OH 45239
CUYAHOGA VALLEY ATARI USERS GROUP, c/o JAMES STEWART, 2111 18TH ST. S.W., AKRON, OH 44314
FEDATA NET, P.O. BOX 11355, CLEVELAND, OH 44111
NOBUG, (NORTHERN OHIO BUSINESS USERS GROUP) 571 EAST 185th STREET, EUCLID, OH 44119; (216) 944-5800
PENN OHIO 99/4A HOME COMPUTER USERS GROUP, 330 CRANDALL AVENUE, YOUNGSTOWN, OH 44504
THE SANDBOX, P.O. BOX 541, FAIRBORN, OH 45324-0541

OKLAHOMA

GREEN COUNTRY COMPUTER ASSOCIATION, P.O. BOX 497, TULSA, OK 74101
OK LOCAL OSBORNE GROUP, 1809 VANESSA DRIVE, NORMAN, OK 73071
TINKER ATARI COMPUTER ENTHUSIASTS, P.O. BOX 19956, OKLAHOMA CITY, OK 73144

OREGON

C = BUG 2001 NE HYDE ST., HILLSBORO, OR 97124

PENNSYLVANIA

APPLE*ARMY, RD1 BOX 83½, DORNSIFE, PA 17823
ATARI ELITE, P.O. BOX 58, LIBRARY, PA 15129
DECISION DATA COMPUTER USERS, 100 WITMER ROAD, HORSHAM, PA 19044
LEHIGH VALLEY SANYO USERS GROUP, c/o JOHN ORLANDO III, 1111 MICA CIRCLE, BETHLEHEM, PA 18017; (215) 691-2794
NAAUG, P.O. BOX 376, LEMONT, PA 16851; (814) 237-5511
NITTANY USERS OF TEXAS INSTRUMENTS, 625 WILTSHIRE DRIVE, STATE COLLEGE, PA 16803
S.A.G.E. OF NE PA ATARI USERS GROUP 204 SANDERSON AVE., OLYPHANT, PA 18477
THE YORK AREA 99'ERS USERS GROUP, P.O. BOX 7160, YORK, PA 17404

RHODE ISLAND

SOUTH CAROLINA

SOUTH DAKOTA

TENNESSEE

EAST TENNESSEE CENTRAL HEATH USERS GROUP, c/o G.R. STRADLEY, 1304 WITTHOLLOW ROAD, SEVIERVILLE, TN 37862; (615) 428-2057
LUSCOMBE, KNOXVILLE, TN 37919, C/O WALTER SCOTT, 615-690-3864
KAPPA (MEMPHIS KAYPRO USERS GROUP), 5983 MACON COVE, MEMPHIS, TN 38103
MUSIC CITY APPLE CORE, 2120 CRESTMOOR, SUITE 333, NASHVILLE, TN 37215
NASHVILLE MACINTOSH USERS GROUP, c/o CLARK THOMAS, 2305 ELLISTON PLACE #C5, NASHVILLE, TN 37203; (615) 327-1757
SINCLAIR NETWORK, (NORTH AMERICAN TIMEX/SINCLAIR GROUP), 4420 ALAMABA AVE. NR. 2, CHATTANOOGA, TN 37409-1614

TEXAS

AACE, 8207 BRIARWOOD LANE, AUSTIN, TX 78758
BAYLOR USERS GROUP c/o GARY FLEMING, 1912 S. 5TH #458, WACO, TX 76706; (817) 755-7603
DALLAS TI HOME COMPUTER GROUP, 1221 MOSSWOOD PLACE, IRVING, TX 75061
DALTRUG, TRS-80 USERS GROUP, INC., PO BOX 400472, DALLAS, TX 75240
LONE STAR COMMODORE USERS GROUP (WACO), 2120 RAMADA DRIVE, WACO, TX 76710
NET 99ER HCUG, P.O. BOX 534, HURST, TX 76053
NORTH TEXAS ST USERS (ATARI), 625 VALLEY VIEW, ALLEN, TX 75002; (214) 727-6567
RANDOLPH AREA ATARI USERS' GROUP, PO BOX 2611, UNIVERSAL CITY, TX 78148

UTAH

VERMONT

GREEN MOUNTAIN APPLE CLUB, c/o STEVE HIRSCH, 985 NORTH AVENUE, APT. B7, BURLINGTON, VT 05401

VIRGINIA

ADVENTURE GUILD, 313 WILLIAM STREET, FRED., VA 22401
RICHMOND TANDY USERS GROUP, 13419 OAK LANE, MIDLOTHIAN, VA 23113
SANYO USERS GROUP OF WASHINGTON, P.O. BOX 2468, FAIRFAX, VA 22031

WASHINGTON

AMIGA USER GROUP, c/o JIM NAIDEN, 17050 2ND AVENUE N.W., SEATTLE, WA 98177; (206) 546-3482
K & K SHERMAN USER GROUP, 910 10th AVENUE EAST, SUITE 204, SEATTLE, WA 98102
PUGET SOUND KAYPRO USERS GROUP, P.O. BOX 88062, TUKWILA, WA 98188
STARBASE-AN OFFICIAL ATARI USERS GROUP, c/o WILMA CRAWFORD, 3223 177th PL., NE, ARLINGTON, WA 98223
TELECOMMUNICATIONS USERS GROUP, P.O. BOX 45254, SEATTLE, WA 98145-0254
V.I.S.T.A., VASHON ISLAND SINCLAIR-TIMEX ASSOCIATION), P.O. BOX 199, VASHON ISLAND, WA 98070
WASHINGTON AMIGA GROUP, c/o RICH MEDVED, 7004-175 ST. SW, EDMONDS, WA 98020; (206) 743-9576

WEST VIRGINIA

MID-OHIO VALLEY COMMODORE CLUB, INC. P.O. BOX 2222, PARKERSBURG, WV 26102-2222

WISCONSIN

APPLETON ATARI PERSONAL COMPUTER USER'S SOCIETY, c/o GREG VANDEN HEUVEL, 509 WILLOW DRIVE, KAUKAUNA, WI 54130
ATARI PERSONAL COMPUTER USER'S SOCIETY c/o KARL BUSS, 1230 SOUTH 20th STREET, SHEBOYGAN, WI 53081
MADISON AREA TI USERS GROUP, 3402 PORTAGE, MADISON, WI 53704
PACKERLAND ATARI COMPUTER USER'S SOCIETY, c/o PETER SCHEFSKY, 2714 SOUTH 11th PLACE, SHEBOYGAN, WI 53081
SINCLAIR MILWAUKEE USERS GROUP, P.O. BOX 101, BUTLER, WI 53007

WYOMING

ADAMLAND INTERNATIONAL ADAM USERS GROUP, 795 GARFIELD, LANDER, WY 82520

CANADA

ALBERTA
BRITISH COLUMBIA

OKANAGAN QL USERS GROUP, c/o W.M. JOHNSTON, SITE 41, e. 17, R.R. #3, PENTICTON, BC V2A 7KA

MANITOBA
ONTARIO
QUEBEC
SASKATCHEWAN
NEW BRUNSWICK
PRINCE EDWARD ISLAND
NOVA SCOTIA
NEW FOUNDLAND

GERMANY

PANAMA

PANAMA CANAL ATARI USERS GROUP, APARTADO NO 5265, BALBOA-ANCON, REPUBLICA DE PANAMA

MEXICO

MICROCOMPUTER CLUB, C/O ALFREDO BOZALI, FTE. DE QUIJOTE #5, MEXICO, 10, D.F.

PUERTO RICO

COMMODORE USER'S GROUP OF PUERTO RICO, CALLE 16 35-24 VILLA CAROLINA, CAROLINA, PR 00630 (809)762-2422
THE VIC-20 USER'S GROUP, C/O ROBERTO MORALES, JR., 655 HERNANDEX ST., MIRAMAR, PUERTO RICO 00907

SPAIN

EUROPEAN APPLESHARE, c/o CNOGB, CHRIS STONE, TORRE DE MADRID, PLANTA 7, OFICINA 14, C/PRINCESA 1, MADRID, SPAIN 28008

TRINIDAD

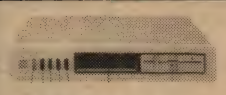
TRINIDAD ASSOCIATION OF COMMODORE OWNERS (TACO), C/O BRENT MUNDY, 118 MEADOW DR., ORANGE GROVE, TACARIGUA, TRINIDAD

EGA SPECIAL

TATUNG 1380 EGA MONITOR WITH EGA GRAPHICS CARD Only $689.00!

EGA CARD .....Only $249.00
* 640 x 350 Resolution
* 256K Graphic Memory

EXTERNAL SYSTEM


FRONT VIEW

ON SALE!

REAR VIEW Cooling Fan

WITH POWER SUPPLY FOR POWER CONTROL, HARD DISK DRIVES, TAPE BACK-UP DRIVES OR SLIM DRIVES

Extremely Low Price: $95.00 Only!

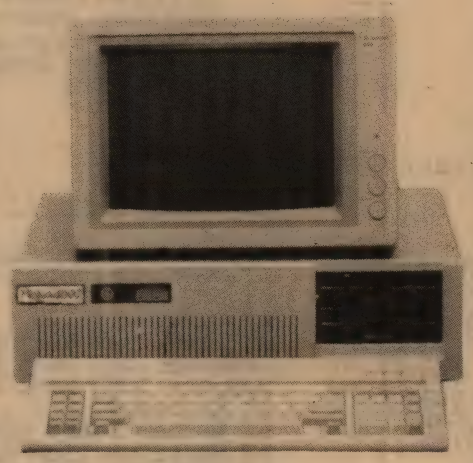
XT ADD-ON CARDS

MULTI I/O CARDS
COLOR GRAPHICS CARDS WITH PRINTER PORTS
MEGA-16 BAR-CODE-READERS
SERIAL CARDS
MONOCHROME GRAPHICS CARDS
COLOR GRAPHICS CARDS

DEALERS PLEASE CALL FOR QTY PRICES!
ALL CARDS WITH FCC APPROVAL ID!

* 90 DAYS WARRANTY ON LABOR & PARTS
* IBM, XT, AT ARE THE TRADEMARKS OF INTERNATIONAL BUSINESS MACHINE CORP.

Mega 4000 TURBO
Personal Computer

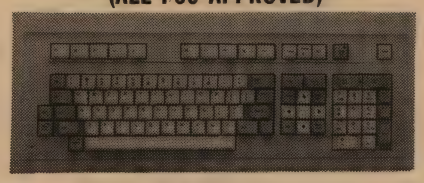


FCC APPROVED
FEATURES:
* KEYBOARD SELECTABLE TURBO SPEED 4.77-8 MHZ, 40% FASTER
* 8088-2 MICRO-PROCESSOR WITH 8087 CO-PROCESSOR OPTIONAL
* 4 LAYERS MOTHER BOARD WITH 256K EXPANDABLE TO 640K ON BOARD
* EIGHT EXPANSION SLOTS THAT ALLOW EASY SYSTEM EXPANSION BY USING OPTIONAL PLUG-IN ADAPTORS
* RUN MOST OF THE IBM PC/XT SOFTWARE SUCH AS LOTUS 123, FLIGHT SIMULATOR, dBASE III, WORDSTAR, ETC.
* 135W POWER SUPPLY
* AT STYLE CASE WITH KEYLOCK PROTECTION OR IBM STYLE CASE
* AT STYLE KEYBOARD
* SYSTEM BOX AND OPERATION MANUAL
* SIX MONTH WARRANTY

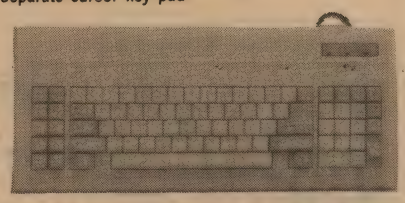
Competitive PC/XT Price: $419.00 Only!
Dealers Please Call For Best Quantity Price!!

MONO SYSTEM $849.00
Including: 640K, 2 Slim Drives, Color Graphics Card, Serial, Parallel, Game Port, Monochrome Monitor, System Operation Manual
* Add $475.00 for 20MB Seagate hard drive with WD controller; free installation
* Add $235.00 more for RGB Color Monitor (Amber/Green Switch)

XT, AT KEYBOARDS
(ALL FCC APPROVED)

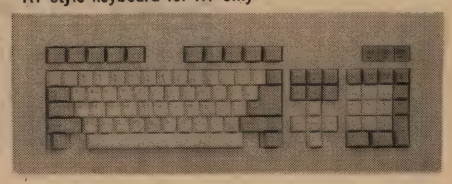


5151 STYLE KEYBOARD $62.00
* IBM™ PC/XT Compatible Keyboard
* Separate cursor key pad



5060 KEYBOARD $59.00
* IBM™ PC/XT & PC/AT Compatible Keyboard
* No switch, automatic selection
* LED's for cap lock, num. lock & scroll lock

K-151L KEYBOARD $55.00
* AT style keyboard for XT only



K-155 KEYBOARD $75.00
* IBM™ PC/XT, PC/AT Compatible
* Keytronic 5151 Keyboard alike
* 95 Keys Keyboard
* Separate cursor key pad.

MAY COMPUTERS CORP.

8210 KATELLA AVE., STE. D
STANTON, CA 90680
Please Call (714)897-2037 For Best OEM Qty. Price

* Cal. Res. add 6% Sales Tax
* UPS C.O.D. Cashier Check only
* Add $3.00 Handling Charge, Plus UPS Shipping Charge
* FAST DELIVERY GUARANTEED

Special Sale

FCC approved

PC/XT $249
PC/AT $985

PC-XT 2MB RAM CARD
1. INTEL & LOTUS ABOVE CARD (EMS) COMPATIBLE
2. RUN LOTUS V2.0, FRAMEWORK II, SYMPHONY V1.1 ETC.
3. SUPER RAMDISK DRIVE, FASTER THAN HARD DRIVE 5 TIMES

$189

PC-XT 2MB MULTIFUNCTION CARD
1. ALL ABOVE FUNCTION
2. PARALLER, RS-232, GAME PORT
3. REAL TIME CLOCK/CALENDAR
4. RECHARGEABLE BATTERY **$249**

ENHANCED COLOR GRAPHIC ADAPTER CARD
100% IBM E.G.A. CARD COMPATIBLE

1. 256K DISPLAY RAM BUFFER
2. BUILT-IN PRINTER PORT
3. 16 COLORS IN 640*200 & 320*200 PIXELS
4. 640*350 IN COLOR, 720*350 IN MONOCHROME
5. SUPPORTS 64 COLORS IN 640*350 COLOR MODES
6. FOR PC, XT, AT OR COMPATIBLE COMPUTER **$269**

PC-XT & PC-AT NETWORK CARD
1. MULTIUSER
2. HARD DRIVE & DATABASE SHARE
3. 1 MILLION BITS/SEC DATA TRANSFER SPEED
4. UP TO 4000 FEET CONNECT LENGTH
5. POWERFUL SOFTWARE SUPPORT

$299

DISK DRIVE CONTROLLER
- HANDLE 4 FLOPPY DRIVES
- INCLUDED CABLE FOR 2 INTERNAL DRIVES
- DB37 FOR EXTERNAL DRIVES
- FOR QUAD DENSITY DRIVE W/ JFORMAT **$39**

COLOR/GRAPHIC CARD
= FULLY COMPATIBLE WITH IBM COLOR CARD =

- RGB, COMPOSITE COLOR, MONOCHROME PORT
- RF MODULATOR CONNECTOR
- LIGHT PEN INTERFACE
- RESOLUTION : 640 * 348 **$69**

MONO/GRAPHIC/PRINT CARD
= FULLY COMPATIBLE WITH IBM MONOCHROME ADAPTER =
W/ HERCULES GRAPHICS

- RUN LOTUS 123, FRAMEWORK, AUTOCAD GRAPHIC
- RESOLUTION : 720 * 348 **$79**

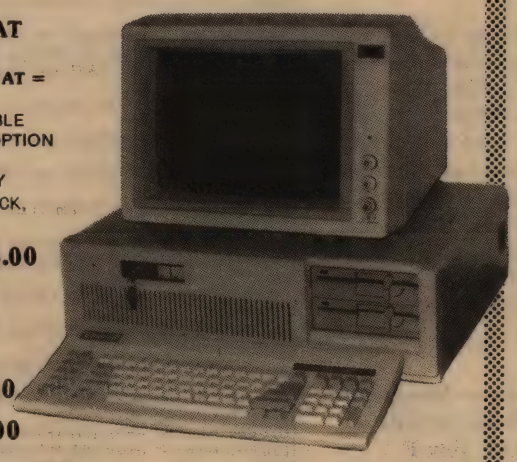
MULTI. I/O FLOPPY CARD
= SPECIAL FOR 640K MOTHERBOARD =

- 2 FLOPPY DRIVE CONTROLLER
- 2 SERIAL PORT (2nd OPTION)
- PARALLER, GAME PORT
- CLOCK/CALENDAR
- RAMDISK & SPOOLER
- SOFTWARE, CABLE, MANUAL **$89**

384K MULTIFUNCTION CARD
= ALL THE FEATURES OF AST'S 6 PACK PLUS AT HALF PRICE =

- EXPANDABLE 0-384K RAM
- PARALLER, SERIAL, GAME PROT
- CLOCK/CALENDAR
- RAMDISK/SPOOLER
- SOFTWARE, CABLE, MANUAL **$89**

10MHZ TURBO PC/AT BUSINESS SYSTEM
= 110% FASTER THAN IBM AT =



- 6.77& 10MHZ SWITCHABLE
- 80286-10 CPU & 80287 OPTION
- 1024K RAM ON BOARD
- 200W AT POWER SUPPLY
- AT STYLE CASE W/LOCK, SPEAKER

SKD SYSTEM: •••• **985.00**

OPTION:

- AT STYLE KEYBOARD (W. GERMANY' CHERRY' SWITCH) **89.00**
- HARD & FLOOPY CONTROLLER (WESTERN DIGITAL) **249.00**
- 1.2MB TEAC DISK DRIVE **139.00**
- MONO/GRAPHIC ACRD W/PRINT PORT **79.00**
- SAMSUNG TTL MONITOR **79.00**

PC/AT 10MHZ TURBO SYSTEM ••••• **$ 1620.00**

10MHZ TURBO PC/XT SYSTEM
THE BEST PC/XT COMPATIBLE IN USA

90% FASTER THAN IBM PC/XT
330% FASTER THAN IBM PC/XT (CHANGE CPU TO V20)

- 4.77MHZ, CPU:8088
- 640K BOARD W/256K RAM
- 8 EXPANSION SLOTS
- 150W SEASONIC POWER SUPPLY
- XT STYLE CASE

SKD SYSTEM: •••••••• **239.00**

OPTION:

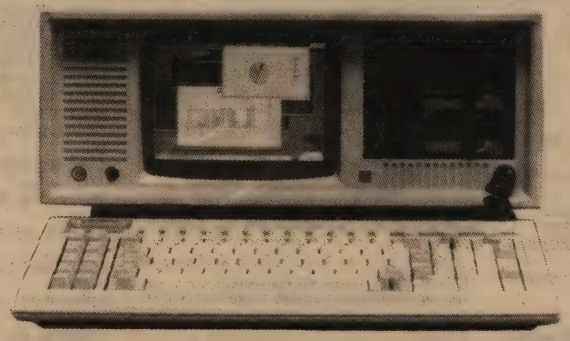
- XT STYLE KEYBOARD **59.00**
- DRIVE CONTROLLER **39.00**
- 360K TEAC DISK DRIVE **89.00**
- MONO/GRAPHIC CARD W/PRINT PORT **69.00**
- SAMSUNG TTL MONITOR **79.00**

STAND PC/XT SYSTEM **574.00**

8MHZ TURBO PC/XT SYSTEM **594.00**

10MHZ TURBO PC/XT SYSTEM **624.00**

10MHZ V20 TURBO PC/XT SYSTEM **634.00**



DUAL SPEED IBM FULLY COMPATIBLE
40% FASTER THAN IBM PC-XT

- 4.77 & 8 MHZ
- 640K RAM ON BOARD
- 8088-2 CPU & 8087 OPTION
- 2 DISK DRIVES
- DISK DRIVE CONTROLLER
- MONO/GRAPHIC CARD
- PRINT, SERIAL, GAME PORT
- REAL TIME CLOCK
- IBM STYLE KEYBOARD (WESTERN GERMANY 'CHERRY' SWITCH)
- 135W POWER SUPPLY
- TTL HI.-RES. MONITOR
- MANUAL & NICE PACKING BOX

SALE **$1049**

10MHZ TURBO SPEED PC/XT MOTHERBOARD
THE 1st FASTEST PC/XT COMPUTER IN USA
90% FASTER THAN IBM PC/XT (BY NORTON UTILITY)
320% FASTER THAN IBM PC/XT(CHANGE CPU TO NEC V-20)

- 4.77 & 10 MHZ SWITCHABLE
- 8088-2 CPU & 8077 OPTION
- 640K EXPANDABLE ON BOARD
- HARD & SOFT SWITCH
- ACCEPTS 2764 & 27256 ROMS
- MANUAL

10 MHZ TURBO MOTHERBOARD W/OK **$149**

8MHZ TURBO MOTHERBOARD W/OK **$119**

4.77MHZ STAND MOTHERBOARD W/OK **$99**

** 10MHZ TURBO SPEED PC/ AT MOTHERBOARD **
THE 1st AT COMPATIBLE EXPANDABLE TO 1MB, 4MB, 16MB RAM ON BOARD

- 110% FASTER THAN PC/AT (BY NORTON UTILITY)
- 6, 8, 10 MHZ HARDWARE SWITCHABLE
- SPECIAL SOCKET FOR 1MB, 4MB RAM CHIPS
- 80286-10 CPU & 80287 OPTION
- BUILT-IN CLOCK, BATTERY RECHARGEABLE

AT MOTHERBOARD W/OK **$690**

PC-AT 2.5MB MULTIFUNCTION CARD $159

PC-AT 3MB MULTIFUNCTION CARD $189

PC-AT 3.5MB RAM CARD $165

TATUNG 1380 F EGA MONITOR $427

$$ HARD DRIVE SPECIAL $$

20MB XT SEAGATE HARD DRIVE (FORMAT+TED) W/WESTERN DIGITAL CONTROLLER & CABLE **$395**

20MB AT SEAGATE HARD DRIVE (FORMAT+TED) **$495**

30MB AT SEAGATE HARD DRIVE (FORMAT+TED) **$595**

40MB AT SEAGATE HARD DRIVE (FORMAT+TED) **$695**

PC/XT, AT KEYBOARD
= MODERN STYLE =

- WESTERN GERMANY 'SCHERRY' SWITCH
- MECHANICAL KEY SWITCH
- AUTO-REPEAT & N-KEY ROLLOVER
- LED FOR CAP & NUM LOCK

KB-151L AT/XT KEYBOARD (SWITCH FOR AT OR XT) **$84**

KB-155 AT/XT (5151 STYLE) KEYBOARD (AUTO SWITCH AT OR XT) **$99**

IBM IS THE TRADEMARK OF INTERNATIONAL BUSINESS MACHINE CORP.

IMPERIAL COMPUTER CORPORATION
935 S. San Gabriel Blvd. San Gabriel, CA91776
(818)285-1256, 285-1257, 285-1258
TELEX: 3719072 IMPERIAL

TERMS:
1. FAST DELIVERY GUARANTEE
2. C.O.D. ORDERS/CASHIERS CHECKS ONLY
3. PERSONAL CHECK ALLOW 10 DAYS TO CLEAR
4. VISA/MASTER CARD WELCOME
5. PRICE SUBJECT TO CHANGE WITHOUT CHANGE
6. ALL ITEMS 90 DAYS GUARANTEE

Bulletin Board

BULLETIN BOARD

The Bulletin Board is a regular feature of *Computer Shopper*. This is where you can list your public access of community bulletin boards at no charge. BBS listings are in area code sequence. If you would like to have your BBS listed, follow the instructions listed below:

BBS Submission Policy

All Bulletin Board entries must be submitted in writing by the first Monday of every month. **Submissions received by the first Monday of July will appear in the September issue.** The listing will be good for three issues thereafter. After this period they will be deleted unless we receive a post card or letter confirming the board is active. It is the responsibility of the person who submitted the listing to mail all corrections, updates, and deletions to *Computer Shopper*. Remember, if you do not let us know when your board is down, it will be listed until deleted.

Send all correspondence to:

Computer Shopper
Bulletin Boards
P.O. Box F
Titusville, FL 32781

We are not responsible for errors published in these listings.

ACGNJ BBS, Watchung, NJ 201-753-9758; 300/1200/2400 baud *24
AMIS Park Ridge, NJ 201-391-5519
BACKSTAGE BBS Fort Lee, NJ 201-944-1196; 300/1200 baud *24
CADDY SHACK, Bricktown, NJ 201-920-2353 *24
CASTLE WESTERBURG, East Brunswick, NJ 201-238-6166 *24
COMPUTECH RBBS, Ledgewood, NJ 201-584-0540 *24
DIAL-YOUR-MATCH -299 Elizabeth, NJ 201-558-1552
DILLINGER'S ESTATE, Hopatcong, NJ 201-398-5513; 300/1200 baud IBM XT *24
FREE BBS North Brunswick, NJ 201-297-7399; 300/1200 baud; Macintosh, Apple, IBM PC, Commodore, CP/M *24 or 201-821-6164 8pm-8am; 300/1200 baud; Macintosh, Apple, IBM PC, Commodore, CP/M
GALAXY III, Maplewood, NJ 201-763-5889 *24
HARDSCRABBLE ISLAND BBS, Beachwood, NJ 201-286-4041 *24
THE HEATH 17 BBS Fairlawn, NJ 07410; 201-261-1988; 300 baud only
MACAPPLE PEEL, Paterson, NJ 201-340-9792; 300/1200 baud *24
MICRO CHART, Hackensack, NJ 201-342-8101 300/1200 BAUD *24
MONMOUTH COUNTY T.B.B.S. Red Bank, NJ 201-528-6623; 300/1200/2400 baud *24
MONMOUTH COUNTY TECHIE, Howell, NJ 201-370-4756
NORTH JERSEY TECHNICAL GROUP Hoboken, NJ 201-798-0065 *24
OMEGAMMON DBBS Jersey City, NJ 201-653-3893; IBM & compatibles; 300/1200/2400 baud *24
PAN WORLD INTERNATIONAL North Brunswick, NJ 201-297-7399; IBM PC/XT; 300/1200 baud *24
PIRATES NEST AE, Sussex, NJ 201-875-3384 300 BAUD, PW=DEVO; 9am-9pm 7days/week
THE POLICE ACADEMY BBS Manasquan, NJ 201-223-2834; Apple based *24
SKULL ISLAND BBS, Millburn, NJ 201-379-1459; Atari; 300 baud *24
SMERSH AE Lavallette, NJ 201-793-3274 *24
THE STADIUM, Waldwick, NJ 201-445-8055
SYNDICATE BBS, Middlesex, NJ 201-968-8148; Atari & ASCII 300 baud *24
THE VILLAGE XCHANGE Jersey City, NJ 201-659-7325; 300/1200 baud; Commodore 64 *24
THE WAR ROOM, Bloomfield, NJ 201-743-8653; 300/1200 BAUD *24
THE WHITE HOUSE BBS Clark, NJ 210-388-1676; Atari *24

DIAL-YOUR-MATCH -244 Washington, D.C. 202-575-3351
DIAL-YOUR-MATCH -306 Washington, D.C. 202-544-4751

ACE TALK Clinton, CT 203-669-3456; 300/1200 baud *24
CHELSIE 99ERS BBS Newington, CT 203-665-0119; 6pm to 6am weekdays; *24 weekends; 300/1200 baud
COMPUTER TOOLBOX, Waterbury, CT 203-271-1579; 300/1200 BAUD *24
THE PHANTOM ZONE Stamford, CT 203-356-9679 *24
SKYLINE SUPER SYSTEM Ellington, CT 203-875-7852 4pm to mid, 300 BAUD
STAR TREK BBS, Baltic, CT 203-822-8176; 300 baud; XMODEM *24

ALCATRAZ 204-339-8085; C-64 *24

ALL NIGHT NINJA 204-256-9332; C-64 *24
ALPHA NET BBS 204-667-5919; Apple *24
APPLE CONNECTION 204-255-6288; Apple *24
ARIEL I 204-783-3617; IMSAI *24
ATARI NET BBS 204-885-6932; Atari *24
ATOMIC BAR 204-255-8938; Tandy 1000; 7am-7pm
ATOMIC CABARET 204-255-8938; CoCo; 7pm-7am
ATOMIC PARASITE 204-256-4536; C-128; 7pm-7am
BIG MEAT EATER 204-832-3198; C-64; 10pm-8am
BON'S BAY 204-261-6048; IBM *24
BULLET BBS 204-669-3305; C-64 *24
COMLINK 64+ 204-837-5209; C-64 *24
COMP-U-LIT 204-888-5136; C-64; 10pm-6am
COMPUTER OUTLET 204-589-1957; C-64 *24
DEMENTED DATA 204-832-5397; Apple *24
DIAL-YOUR-MATCH -187 Winnipeg, CANADA 204-949-1100
DR. DECIBLE 204-832-3820; C-64 *24
EXCHANGE 204-255-1991; Apple *24
FIDONET 204-783-5013; Slicer *24
GENERIC BBS 204-475-5199; C-64 *24
GENERIC II 204-475-3228; Mac *24
HARD ROCK CAFE 204-885-3728; C-64 *24
HYPER-LINK 204-889-9560; TRS-80 *24
INFO-NET 204-669-5454; Apple *24
IRON BOARD 204-832-5348; C-64 *24
J&J'S 204-942-1109; TRS-80 *24
KORTEX RBBS 204-947-6821; IBM; NON-BUSS.
LATE NIGHT... 204-832-6694; C-64 *24
LITTER BOX 204-668-3995; Apple *24
M.A.C.C. 204-774-2231; Atari *24
M.A.U.B. 204-885-5798; Mac *24
M.W.O.G. 204-452-5529; Osborne *24
MASTERMIND 204-222-6902; C-64 *24
MICRO-MART 204-589-4742; Amiga *24
MILLIWAYS 204-256-8883; CoCo; 10pm-4pm
PRICE IS RIGHT 204-837-5933; C-64 *24
REALM BBS 204-233-8337; C-64 *24
REALM OF THE CLAM 204-832-1221; C-64 *24
ROACH MOTEL 204-253-9898; C-64 *24
ROM ELEC. CATA. 204-888-0498; IBM; 7pm-12pm
SCHOOL NET 204-889-3584; Apple *24
SILICONE VALLEY 204-888-4320; C-64 *24
SMORGAS BOARD 204-889-1432; TI-99/4A *24
SOFTWARE DIM. 204-586-6714; C-64 *24
T.A.B.B.S. 204-885-7020; Atari *24
TELETRAN ONE 204-661-8624; C-64 *24
TITAN'S 204-589-2239; Atari *24
TRONICA (T.I.N.) 204-943-8517; IBM *24
T.V.C.S. 204-885-7921; TRS-80 *24
TWILIGHT ZONE 204-837-9498; VIC.9000 *24
U.S.S. ENTERPRISE 204-895-3298; Apple *24
UNSOUND MIND 204-837-9044; C-64 *24
W.A.U.G. 204-661-8337; Apple *24
WIZARD'S DEN 204-261-9040; Apple; Nights
ZANZABAR HOTEL 204-837-4078; C-64 *24

BEARS LICORICE DISK, Montgomery, Alabama 205-265-5096; 300/1200 baud *24
BLOOM COUNTY ST Huntsville, AL 205-772-8526; 300/1200/2400 baud
THE DARK SIDE Mobile, AL 205-633-0011; Commodore *24
(T)HE (A)PPLE (G)ROUP Auburn, AL 205-826-6053
MONTG. PCUG RBBS, Montgomery, AL 205-264-2278; 2400 baud; 5pm-8am; *24 weekends
TRANS WORLD ATARI, Ozark, AL 205-774-8464; 1200/300 baud *24

ABYSS, Kirkland, WA 206-827-9063; Apple; 300 BAUD
ACCESS NORTHWEST, Vancouver, WA 206-573-7006; IBM; 300/1200/2400 BAUD
ACTION ANNEX, WA 206-892-8969; Atari; 300/1200 BAUD
ALKI EXPRESS, Seattle, WA 206-937-5800; C64; 300 BAUD
ANNEXIAN, Seattle, WA 206-282-9694; C128; 300 BAUD
A.P.P.L.E. CRATE I, Kent, WA 206-872-6789; Apple; 300/1200 BAUD
A.P.P.L.E. CRATE I, (Alternate #) Renton, WA 206-251-0543; Apple; 300/1200 BAUD
A.P.P.L.E. CRATE II, Seattle, WA 206-525-5410; Apple; 300 BAUD; 8pm-8am, *24 on weekends
ARCADIA, Seattle, WA 206-523-6133; C64; 300 BAUD
ARRAKIS, Richmond Beach, WA 206-542-4628; C64; 300 BAUD
A.R.S. (AMATEUR RADIO SUPPLY), Seattle, WA 206-767-3223; C64; 300 BAUD; 6pm-9am
THE ATARI DOGHOUSE, Montesano, WA 206-249-3228
AUTOMAN, Kent, WA 206-854-6336; Atari; 300/1200 BAUD
BACK TO THE FUTURE, Seattle, WA 206-281-8674; 300 BAUD
BADLANDS, WA 206-486-1826; 300/1200 BAUD
BAKER STREET, Kent, WA 206-854-0193; Atari; 300 BAUD
B.A.U.D., WA 206-722-1882; Kaypro; 300/1200 BAUD
BBS AT THE END OF THE UNIVERSE, WA 206-820-1700; Atari; 300 BAUD
BELLEVUE CROSSROADS PC-BOARD Bellevue, WA 206-747-1944; 1200/300 baud
BELLEVUE ROS, Bellevue, WA 206-641-4521; Kaypro; 300/1200 BAUD
BLACK MARIAH, Bellevue, WA 206-641-5833; C64; 300 BAUD
BOGUS ZONE, Auburn, WA 206-939-6143; Atari; 300 BAUD; 10pm-6am
BOILER ROOM, Everett, WA 206-347-1008; Atari; 300/1200 BAUD
BONGOLAND, Kent, WA 206-852-8588; 300/1200 BAUD
BRACE BBS, WA 206-644-1144; Atari; 300 BAUD
BUDGET BOARD, Renton, WA 206-271-8613; Atari; 300 BAUD
BUFFALOE BILL'S, Seattle, WA 206-241-5672; Atari; 300/1200 BAUD
CADDY SHACK, Seattle, WA 206-932-8912; C128; 300 BAUD; Closed Sun. to 10
CAMELOT, Bothell, WA 206-487-1992; Atari; 300/1200 BAUD
CAMP CRYSTAL LAKE, Renton, WA 206-271-2211; C64; 300/1200 BAUD
CARTEL, Kent, WA 206-825-3420; LD; 300 BAUD
CBBS/BECS, Renton, WA 206-235-9496; SBC-200; 300/1200 BAUD
CBBS/PUGET SOUND, Kent, WA 206-630-5229; SOL; 300/1200 BAUD
CHALLENGER 51-L, Kirkland, WA 206-827-0346; TRS-1; 300/1200 BAUD
CHAMELEON CIRCUIT, Everson, WA 206-966-4855; Apple; 300/1200 BAUD; 10pm-7:30am
COLOSSUS: DATA DISCOUNT SERVICE, Mercerls, WA 206-236-2566; Compaq; 300/1200 BAUD
COM-SOFT, Everett, WA 206-337-2144; C64; 300 BAUD
COM-SOFT, (Alternate #) Lynnwood, WA 206-742-8422; 300 BAUD
COMMODORE USER GROUP (CUG), Lynnwood, WA 206-743-6021; C64; 300/1200 BAUD
COMMODORE USER GROUP EAST & SOUTH, Seattle, WA 206-364-6497; 300/1200 BAUD
COMPASS, Seattle, WA 206-523-2530; C64; 206-523-2530; 300 BAUD
COMPUTECH INFORMATION SERVICE, Tacoma, WA 206-759-4391; LD; 300 BAUD
COMPUTER EXCHANGE, Seattle, WA 206-431-8664; TRS-1; 300/1200 BAUD
DELTA HOUSE, WA 206-232-1155; Atari
DIAL-YOUR-MATCH -47 Redondo, WA 206-839-3415
DIAL-YOUR-MATCH -220 Kirkland, WA 206-823-5679
DIANE'S PLACE, Bellevue, WA 206-643-9129; C64; 300 BAUD
DOCTOR'S REALM, Seattle, WA 206-364-6268; Atari; 300 BAUD; 8pm-8am
DOSFILE XL, Seattle, WA 206-367-3453; Atari; 300/1200 BAUD
DOWNSPOUT, Seattle, WA 206-325-1325; Epson; 300/1200/2400 BAUD
DRAGON'S CAVERNS, Richmond Beach, WA 206-542-2757; Atari; 300 BAUD; 10:30pm-8am
ELECTRONIC ANTIOCH, WA 206-443-0629; Apple; 300 BAUD; 8pm-8am weekdays, *24 weekend
ESKIMO NORTH/POLYNET, Seattle, WA 206-367-3837; TRS-16; 300/1200 BAUD
ESP, WA 206-885-1722; C64; 300/1200 BAUD; 10pm-6:30am
EVENT HORIZON, Issaqua, WA 206-392-5829; C64; 300 BAUD; 9:30am-5:30am
FIDO: BECS TANDY, Seattle, WA 206-527-5618; Tandy 1200; 300/1200 BAUD
FIDO: DATA JOCKEY, Bellevue, WA 206-643-0909; IBM PC; 300/1200 BAUD; 7pm-6am
FIDO: EMERALD CITY, Bothell, WA 206-481-6549; Amer XT; 300/1200 BAUD; 6pm-10am
FIDO: HEATH/ZENITH, DesMoines, WA 206-941-6943; IBM PC; 300/1200 BAUD
FIDO: PTC-NET, Burlington, WA 206-757-5233; 300/1200/2400 BAUD; 5pm-7am; *24 weekends
FIDO: TROUBLE SHOOTER, WA 206-922-0106; Sanyo; 300/1200/2400 BAUD
FIDO: UNDER THE RAINBOW, Bothell, WA 206-485-5320; DEC Rnbw; 300/1200 BAUD; 4:30pm-10pm
FIDO: WATER SHED, WA 206-878-1941; AT&T 6300; 300/1200 BAUD
FOUNDATION AND EMPIRE, Seattle, WA 206-323-1330; Atari; 300/1200 BAUD
FPS TECH-BOARD, Tacoma, WA 206-565-9465; 300/1200 BAUD
FRENCH CONNECTION, Lynnwood, WA 206-775-4447; TRS 2; 300/1200 BAUD
GALACTIC UNIVERSITY, Seattle, WA 206-431-0557; Atari; 300 BAUD
GAS-XE, Lynnwood, WA 206-745-4077; Atari; 300/1200 BAUD
GATEWAY, Silverdal, WA 206-698-1388; LD; 300/1200 BAUD
GNOMES GNOLL, Everett, WA 206-334-0223; LD
THE GREAT NORTHWEST BUYERS BOARD 206-598-3228; 7pm-10pm Monday-Thursday; 7-pm Friday-10pm Sunday; 300 baud
GREAT WHITE NORTH, WA 206-828-9453; Atari; 300 BAUD
HAM NET & ELECTRONICS, Seattle, WA 206-285-3040; C64; 300 BAUD
HARRY'S HIDEAWAY, Renton, WA 206-226-7506; C64; 300 BAUD; 8pm-7am
HEATH USERS' GROUP PERSONAL BBS, Seattle, WA 206-782-1302; H-101; 300 BAUD; 4pm-7pm; *24 weekends
HI-FI T-ROOM, Seattle, WA 206-723-7437; Apple; 300/1200 BAUD
HYBORIAN AE, Seattle, WA 206-522-2508
I.B.S. SYSTEMS: GIG HARBOR BBS, Gig Harbor, WA 206-858-2028; LD; 300 BAUD
I.B.S. SYSTEMS: OUTER LIMITS BBS, Seattle, WA 206-285-3210; C64; 300 BAUD
I.B.S. SYSTEMS: TECH SYSTEM BBS, Bellevue, WA 206-453-0903; C64; 300 BAUD; 10pm-7am
INFORMATION MANAGEMENT SYSTEMS, Tacoma, WA 206-535-2730; Kaypro; 300/1200 BAUD
INFORMER SYSTEMS, Everett, WA 206-337-4078; C64
INVISIBLE SEATTLE, Seattle, WA 206-784-7685; IBM PC; 300/1200 BAUD
JOB SYSTEM, Bothell, WA 206-487-3290; IBM PC; 300/1200 BAUD
J.R.-XCHANGE, Richmond Beach, WA 206-542-8529; TI99; 300/1200 BAUD
JOURNEY TO MARS Bothell, WA 206-486-3136; IBM; 300/1200 baud *24
KNOTHEAD'S NOOK, Kent, WA 206-631-8056; Atari; 300/1200 BAUD
LIFE IN HIS WORD, Tacoma, WA 206-472-9331; LD; 300/1200 BAUD
LORDS OF DARKNESS, Bothell, WA 206-485-0665; C64; 300 BAUD
LORDS OF DARKENESS I, Kirkland, WA 206-821-3387; 300 BAUD
MAC CAVERN BBS, Seattle, WA 206-525-5194; Apple; 300 BAUD
MAPLE HILLS, Renton, WA 206-228-7533; C64; 300 BAUD; 6pm-10pm
MEANING OF LIFE, Kirkland, WA 206-827-9063; LD; 300 BAUD
MICRO MAGIC, Sumner, WA 206-863-1713; LD; 300/1200 BAUD
MINIBIN: KZOK/KJET, Seattle, WA 206-281-5656; TRS-3; 300/1200 BAUD; clsd 7am-11am
MINIBIN: ORBITER, Kent, WA 206-631-4381; LNW; 300/1200 BAUD
MINIBIN: ORBITER (FORWARDING -), Seattle, WA 206-932-2858; 300/1200 BAUD
MINIBIN: SATELITE SYSTEM, Seattle, WA 206-762-5141; TRS-1; 300 BAUD
MINIBIN: TRANQUILITY BASE, Seattle, WA 206-525-0497; TRS-3; 300 BAUD
MINIBIN: CHERYL'S VELVET TOUCH, W. Seattle, WA 206-937-2957; LNW; 300 BAUD
MR. ROGER'S NEIGHBORHOOD, Seattle, WA 206-522-8514; C64; 300 BAUD; 8pm-7am
MULTI PHREAKWENCY, WA 206-742-4280; 300 BAUD
MUSHROOM SHOP, Seattle, WA 206-527-8981; C64; 300 BAUD
NIGHTHAWK BBS, Van, WA 206-694-2852 *24
NORTH STAR T-ROOM RCP/M, WA 206-523-5355; 300/1200 BAUD
NORTHWEST CONNECTION, Seattle, WA 206-935-7530; Apple; 300/1200 BAUD
NORTHWEST MICRONET, Tacoma, WA 206-535-2837; LD; 300/1200 BAUD
OLD CHICAGO, DesMoines, WA 206-838-1815; Atari; 300 BAUD
PC BOARD: UNDERDOG, Seattle, WA 206-725-9233; IBM PC; 300/1200/2400 BAUD
PC BOARD: INFINITY BASE, Seattle, WA 206-329-9260; IBM PC; 300/1200/2400 BAUD
PC MATCH, Seattle, WA 206-935-5416; IBM PC; 300/1200 BAUD
PENITENTIARY, Lynnwood, WA 206-742-6942
PERNET BBS, Seattle, WA 206-782-6669; C64; 300 BAUD; 10pm-3pm
POLYNET PUBLIC SYSTEMS dsPPS, Seattle, WA 206-783-9798; Apple, 300/1200 BAUD
POLYNET PUBLIC SYSTEMS gsPPS, Seattle, WA 206-784-9776; Apple; 300/1200 BAUD
POLYNET PUBLIC SYSTEMS lsPPS, Lacy, WA 206-438-4477; Apple, 300/1200 BAUD
POLYNET PUBLIC SYSTEMS rsPPS, Seattle, WA 206-784-3217; Apple; 300/1200 BAUD
POLYNET PUBLIC SYSTEMS tsPPS, Seattle, WA 206-784-3218; Apple, 300/1200 BAUD
POWER HOUSE I, Bellevue, WA 206-453-4074; C64; 300 BAUD
PROTOSOFT, Seattle, WA 206-932-7125; IBM PC; 300/1200 BAUD
PUBLIC DOMAIN SILO, Lynnwood, WA 206-775-2650; C128; 300/1200 BAUD; 6pm-12am
PX, Seattle, WA 206-246-9627; C64; 300 BAUD; 6pm-6am
RBBS-PC: AUBURN, Auburn, WA 206-833-4183; IBM PC; 300/1200 BAUD; 6pm-12pm
RBBS-PC: ELECTRONICS SYSTEM, Renton, WA 206-235-8760; ZF-160; 300/1200 BAUD
RBBS-PC: HEPTITE GUILD, Mape Valley, WA 206-432-0650; Tava PC; 300/1200 BAUD
RBBS-PC: IBM-PC-UG, Seattle, WA 206-343-7843; 300/1200 BAUD
RBBS-PC: K.A.U.G., Silverdale, WA 206-692-8274; IBM XT; 300 BAUD; 5:30pm-9:30am
RBBS-PC: NIGHT SHIFT, Bothell, WA 206-488-0924; IBM PC; 300/1200 BAUD
RBBS-PC: PLANET CLAIRE, Seattle, WA 206-783-8037; IBM PC; 300/1200 BAUD; 5pm-10pm
RBBS-PC: PUGET SOUND, Lynnwood, WA 206-743-0162; IBM PC; 300/1200/2400
RBBS-PC: PUGET SOUND (SOUTHEND), Seattle, WA 206-281-7661; 300/1200/2400 BAUD
RBBS-PC: SEARS BUSINESS CENTER, Bellevule, WA 206-641-6265; IBM PC; 300/1200 BAUD
RBBS-PC: SEARS BUS. CNTR (Lynnwood), Lynnwood, WA 206-775-8412; 300/1200 BAUD
RBBS-PC: SEATTLE HOMEDOME, WA 206-946-1627; IBM PC; 300/1200/2400 BAUD
RBBS-PC: SHADOW, Lynnwood, WA 206-775-7409; IBM PC; 300/1200 BAUD
RBBS-PC: TRINITY, WA 206-778-3034; IBM PC; 300/1200 BAUD
REALM OF MOISTURE, Redmond, WA 206-882-9025; Atari; 300/1200 BAUD
REEF, Puyallup, WA 206-848-3371; LD; 300/1200/2400 BAUD
RIVERSIDE BBS, Bothell, WA 206-488-7551; Atari; 300 BAUD
ROUND TABLE II, Bellevue, WA 206-746-0829; TRS-4; 300 BAUD
SCRUNCHLAND, DesMoines, WA 206-824-4013; Atari; 300 BAUD
SEACOM-80, Seattle, WA 206-763-8879; TRS-1; 300/1200 BAUD
SHERWOOD FOREST Tacoma, WA 206-531-6148; 300/1200 baud
SHOOTING STAR, DesMoines, WA 206-838-7686; 300 BAUD
SHUTTLE EXPRESS, Redmond, WA 206-885-4636; 300 BAUD
SIXTY-FOUR EXPRESS, Kent, WA 206-852-9412; C64; 300 BAUD; 9pm-8am
SKYLINE, Seattle, WA 206-367-3697; Atari; 300/1200 BAUD
SKYLINE NORTHEND, (Alternate #) Lynnwood, WA 206-778-1143; 300/1200 BAUD
SOFTWARE SALERS, Seattle, WA 206-367-2026; TRS-3; 300 BAUD; 7pm-9am; *24 weekend
SPANAWAY USER'S GROUP, Tacoma, WA 206-531-0783; C64; 300 BAUD
SPEEDWAY, Seattle, WA 206-367-7509; Atari, 300/1200 BAUD
SS RIPTIDE, WA 206-546-8231; C64; 300 BAUD
SS TRADEWINDS, Tacoma, WA 206-752-2889; 300 BAUD
STALLEG XL, Seattle, WA 206-782-5534; Atari; 300/1200 BAUD
STARFLEET HEADQUARTERS, Seattle, WA 206-783-5589; Apple, 300 BAUD
STONEHENGE 1.21: AMIGA/OS9, WA 206-874-6381; Amiga; 300 BAUD; 5pm-8am
STONEHENGE 1.21: GOLDEN SUB, WA 206-488-0381; IBM PC; 300/1200 BAUD
STONEHENGE 1.21: J.J.'s, WA 206-632-1880; IBM PC 300/1200 BAUD
STONEHENGE 1.21: TWILIGHT ZONE, WA 206-745-2438; IBM PC; 300 BAUD
STONEHENGE 1.21: UNDERWORLD, Normandy Park, WA 206-244-6252; Compaq; 300/1200 BAUD
STONEHENGE 2.02: CKMCMS, Seattle, WA 206-329-0436; IBM PC; 300 BAUD
STONEHENGE 2.02: SANCTUARY, Bellevue, WA 206-747-6839; Compaq; 300/1200 BAUD
STONEHENGE 2.02: T.U.G. BBS (MPC5), Seattle, WA 206-632-0272; IBM PC; 300/1200 BAUD
STONEHENGE 2.02: TUKWILA STATION, Seattle, WA 206-244-0125; IBM PC; 300/1200 BAUD
TACOMA STAR TREE (TTST), Tacoma, WA 206-759-0615; LD; 300/1200 BAUD
TARDIS, Seattle, WA 206-329-2202; Datavue; 300/1200 BAUD; 6pm-8am; *24 weekend
TELECOMMUNICATIONS USERS GROUP Seattle, WA 206-763-3116; 300 baud
TELE-MESSAGE 1, Seattle, WA 206-282-2482; C64; 300 BAUD; 5:30pm-11pm
TELE-MESSAGE 2, Seattle, WA 206-282-2482; Atari; 300 BAUD; 5:30pm-11pm
TELE-MESSAGE 3: COSMIC CONNECTION, Bellevue, WA 206-641-3705; C64; 300 BAUD
TELE-PIRATER64, WA 206-543-8714; 300/1200 BAUD
TELE-TRAVEL, Kirkland, WA 206-823-6091; 300/1200 BAUD
TICOMM, Seattle, WA 206-784-4142; TI99; 300 BAUD; Evenings
TIGERS LAIR, DesMoines, WA 206-874-4115; Apple; 300 BAUD
TOXIC BBS, Kent, WA 206-854-6147; Atari; 300 BAUD
TRIDENT BASE ONE, Bremerton, WA 206-698-2387; Apple; 300 BAUD
TRON, Bothell, WA 206-485-7784; 300 BAUD
UNIX BBS, Yelm, WA 206-458-3086; S-100; 300/1200 BAUD
USPS EXCHANGE, Seattle, WA 206-323-0711; C128; 300 BAUD
VIEWPORT (PAUG), Mercerls, WA 206-236-2246; Amiga; 300/1200 BAUD
WAVE NETWORK: RADIO 1, DesMoines, WA 206-878-0158; C64; 300/1200 BAUD
WAVE NETWORK: RADIO 2, DesMoines, WA 206-941-7649; 300 BAUD
WAVE NETWORK: RADIO 5, DesMoines, WA 206-838-0783; C64; 300 BAUD
WBBS: THE MISSING LINK, North Hill, WA 206-878-1823; Sanyo; 300/1200 BAUD
WHITTLEBIT T-ROOM, Juanita, WA 206-868-2866; Onyx; 300/1200 BAUD
WILD CAT CAT-FUR, Bothell, WA 206-488-9704
XANTH II ST, Bellevue, WA 206-747-9638; 520ST; 300/1200 BAUD
XANTH II ST, (Alternate #) WA 206-682-8039; 520ST; 300/1200 BAUD
XANTH II ST NORTH & SOUTHEND, Seattle, WA 206-328-2755; 520ST; 300/1200 BAUD
128-XCHANGE, Olympia, WA 206-943-4548; C128; 300 BAUD
28 BARBARY LANE, Seattle, WA 206-323-2828; Atari; 300 BAUD
64 E/T, Lynnwood, WA 206-776-0749; C64; 300 BAUD

DIAL-YOUR-MATCH -315 Westbrook, ME 207-854-1365
EERC South Blue Hill, ME 207-374-2203; 6pm to 6am *24 weekends
MID-COAST MAINE BBS North Haven, ME 207-867-2241; 300/1200 baud; Sun-Thur 9pm-9am EDT; Fri-Sat 9pm-NoonEDT
MMOOS, Brunswick, ME 207-725-8456 *24

ANLN Hayden Lake, Idaho 208-772-6134 *24
THE BSU BOOKSTORE Boise, Idaho 208-343-5000

99 BBS, Manteca, CA 209-239-9529; 300/1200 BAUD *24
RCP/M CBBS, Tulare, CA 209-685-0306; 300/1200/2400 BAUD *24
REGION 7 TEC CENTER ELECTRONIC BBS, Modesto, CA 209-571-5085

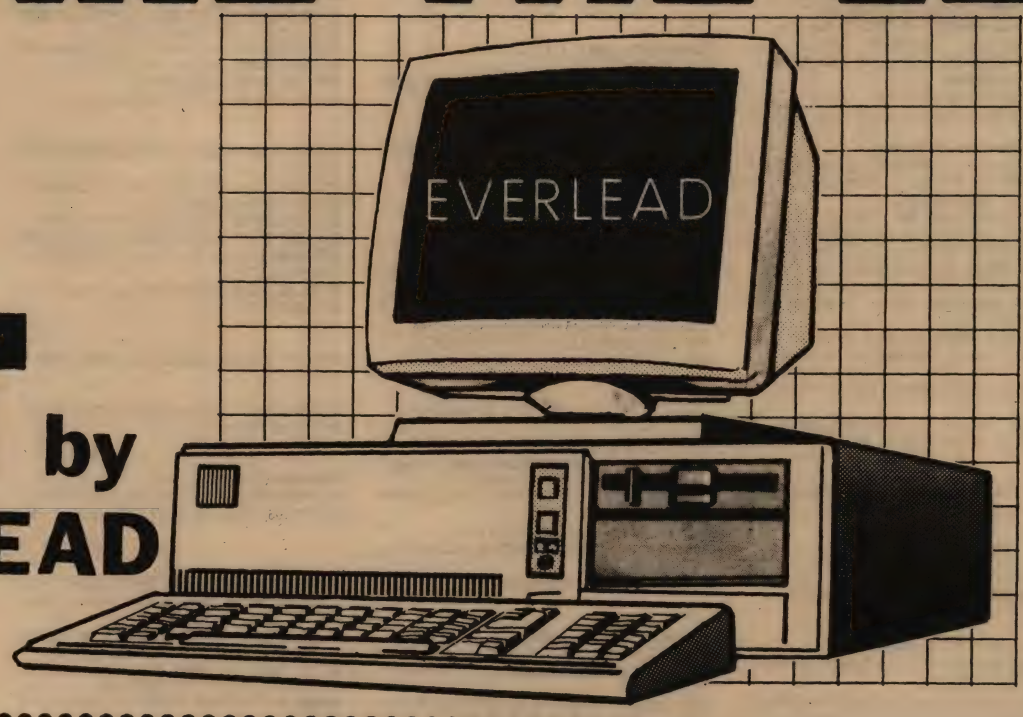
AFTER HOURS BBS Bronx, NY 212-547-4210
DIAL-YOUR-MATCH -264 New York City, NY 212-219-1758
DIAL-YOUR-MATCH -286 New York, NY 212-925-6765
OVER WORLD BBS, Fresno, CA 209-222-1057; Atari Only *24
TICKERSCREEN New York 212-986-1660; stock market bulletin board system; 5:00pm to 9:00am weekdays and *24 on weekends

64 SHOP, Los Angeles, CA 213-566-2937; 300 BAUD; *24
64 SHOPPER Downey CA 213-566-2937; 300 BAUD *24
99BBS, La Habra, CA 213-947-7777
AGE OF THE SHADOW Whittier, CA 213-699-1233
COMMODORE MONITOR, South Gate, CA 213-566-2937; 300 BAUD; *24
COMPUTER CONFERENCE, Center, Torrance, CA 213-212-5267
COMPUCENTER 213-320-0222; 300/1200 baud *24
COMTELL, Los Angeles, CA 213-470-2673; 300/1200 BAUD *24
DIAL-YOUR-MATCH -36 Marina Del Rey, CA 213-397-6300
DIAL-YOUR-MATCH -52 Los Angeles, CA 213-225-9279
DIAL-YOUR-MATCH -164 Malibu, CA 213-457-9150
DIAL-YOUR-MATCH -238 Long Beach, CA 213-438-4777
FIDO 102/115 MACHINEDO, San Pebro, CA 213-548-3546; 300/1200/2400 baud
LYNZIE'S MOTHERBOARD, N. Hollywood, CA 213-659-1982 *24
MARINA MATCHUP, Los Angeles, CA 213-390-3239
TE-II 99 BBS Whittier, CA 213-947-7777; 300/1200 baud *24
THE WARGAMES RBBS, Santa Monica, CA 300/1200/2400, 213-393-9777*

ANLN Dallas, TX 214-263-3109 *24
FAST TIMES, Dallas, TX 214-987-1278 *24
TBBS OF TYLER, Tyler, TX 214-566-1374; 300/1200/2400 BAUD; Atari, TRS-80, Kaypro *24
THIEVE'S UNDERGROUND, Dallas, TX 214-357-6446 *24
T.R.A.I.N. BBS, Ennis, TX 214-875-9818; Atari–AMIS Version

A-NET EAGLE'S NET, Philadelphia, PA 215-969-3384
CALTEX -16, Easton, PA 215-258-5235 *24
C.B.M. ONLY, West Lawn, PA 215-678-7691 300 BAUD *24
THE CITADEL, Philadelphia, PA 215-435-7018; 300/1200 BAUD *24
DIAL-YOUR-MATCH -180 Reading, PA 215-372-1726
DIAL-YOUR-MATCH -223 Auburn, PA 215-488-7846
THE EAGLE'S NEST BBS Shillington, PA 215-775-9940; 300 baud *24
LEHIGH VALLEY COMPUTER GROUP RBBS, 215-759-1376; 300/1200/2400 BAUD *24
NITE OWL 1, 215-285-6575; 300/1200 baud; *24
NITE OWL 2, 215-759-7347; 300/1200 baud; *24

TAKE THE LEAD



AT by EVERLEAD

EVERLEAD AT

- 80286 CPU, 6/8 MHZ Dual Speed, 512K, Expandable to IMB on Board, Pheonix Bios
- Clock/Calendar with Battery Backup
- Floppy/Hard Disk Controller
- 1.2 MB Floppy Disk Drive
- 200 watt Power supply
- Complete Package of MS-DOS 3·10, Diagnostic & User's Guide
- 1 Year Limited Warranty, Parts & Labor

$1339

EVERLEAD TURBO-XT — $579

4 -Layer PCB, 8088-2 CPU, 4.77/8.00 MHZ Dual Clock Speed, 640K On Board, 8 I/O Slots
150W UL Approved Power Supply
One 360K ½ Height Floppy Drive w/ Controller
5150 XT-Layout Keyboard
User's Guide
180 Day Limited Warranty, Parts & Labor

EVERLEAD XT — $519

8088 CPU, 4.77 MHZ, 640K On Board, 8 I/O Slots
150W UL Approved Power Supply
One 360K ½ Height Floppy Drive w/ Controller
5150 XT-Layout Keyboard
User's Guide
180 Day Limited Warranty, Parts & Labor

PC/XT MOTHER BOARDS

Turbo Mother Board Expandable to 640K, 8MHZ/4.77 MHz Dual speed, 8 I/0 slots $149
640K Mother Board Expandable to 640K, 4.77MHz 8 I/0 Slots $99
Enhanced Turbo Mother Board 4-Layer, Expandable to 640K, 8MHZ/4.77 MHZ Dual Speed, 8 I/0 Slots $169

ADD ON BOARDS

Monochrome Graphic Printer Card Parallel Printer Port Graphic 720 x 348. Text 80 x 25 ..... $79
Floppy Drive Controller for 4 drives w/cable $35
Color Graphic Card RGB Color Port. Light Pen Interface. Graphic Mode 320 x 200 (color) 640 x 200 (B&W). Text Mode 40 x 25 (Res) 80 x 25 (High Res) $65
Multifunction Cards Expandable to 384K, Serial Port, Parallel Port, Game Port, Clock/Calendar, Software $85
Color Graphic Printer Card $85
Multi I/0 Card Serial Port, Parallel Port, Game Port, Clock Calendar, Software $75
Disk I/0 Card Serial Port, Parallel Port, Game Port, Clock/Calendar, Control 2 Floppy Drives $90
Parallel Printer Card $25
RS-232C Card $27
512K RAM Card $49
Game Card $49

MODEMS

300/1200 Baud Internal Modem Hayes Compatible. Half Card Software $175
300/1200 Baud External Modem Hayes Compatible. Software $195

FLOPPY DRIVE

Fujitsu $89
TEAC $99

MONITORS

TAXAN 620 RGB $399
TAXAN 630 RGB $439
TAXAN 640 RGB $559
TAXAN 555 ..... $169
QUIMAX DM-14 T.TL Amber/Green $159
SAMSUNG TTL Green $95
SAMSUNG TTL Amber $99
Mitsubishi RGB $299

HARD DISK

Seagate 20MB ST225 W/WDC $399
Seagate 30MB ST238 W/ADAPTEC $465
Seagate ST4038 30MB For AT $625
Seagate ST4051 40MB For AT $719

MISCELLANEOUS

5150 Keyboard (XT Layout) $65
5060 Keyboard (AT Layout) $85
5151 Keyboard $99
135W Power Supply $75
150W Power Supply $89
XT Case (Flip Top/Slide Out) $49
Joystick $22

Call for AT hard disk and printers

SAVE UP TO 50%

DEALER OEM WELCOME

TINMA TECHNOLOGY INC.

TINMA™

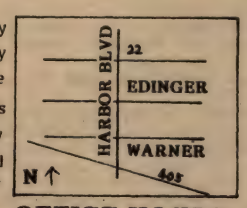
Department 101, 16560 Harbor Blvd. Ste R, Fountain Valley, CA 92708

All System FCC Class B Approved

ORDER HOT LINE (714) 775-3968

IBM & IBM PC/XT are trademarks of International Business Machines
TERMS: Prices Subject to Change All C.O.D. Orders Cash/Cashier's Check
All Return Merchandise Must Have Return Authroization Number 10% For Restocking Charge

UPS Shipping Daily
90-day Limited Warranty
No Service Charge on Credit Cards
All Products Are New
American Express Card Accepted w/ 4% Service Charge



OFFICE HOURS:
Mon-Fri 9:00 a.m. to 5:00 p.m.
Sat 10:00 a.m. to 5:00 p.m.

Bulletin Board

NITE OWL 3, 215-266-9723; 300/1200 baud; *24
SATRONICS MEGA SYSTEM Philadelphia, PA 215-698-1905; 300/1200 baud; Apple *24
TECHIE, Easton, PA 215-252-8867; 300/1200 BAUD *24
TI-LINE Leesport, PA 215-926-1661; 300/1200 baud *24
TI-TALK Reading, PA 215-372-1154; 300 BAUD *24

AKRON DIGITAL GROUP Akron, OH 216-745-7855 *24
AMHERST, Amherst, OH 216-988-8806
ARCADIA BBS Akron, OH 216-644-1014
ATARI Ohio 216-582-2797
ATARI EXPRESS Akron, OH 216-253-9247
ATARI PRISM Akron, OH 216-867-2422
BBS Computer Applications Poland, OH 216-757-3711
BULLET-80 Chesterland, OH 216-729-2769
CAMELOT ATARI BBS Akron, OH 216-864-7002 *24
CLOUD NINE, 216-650-2989 *24
COMNET-80 Akron, OH 216-645-0827 *24
THE COMMODORE ARCADIA, 216-644-1014, 11pm-9am est.
COMMODORE'S BRIDGE Akron, OH 216-929-1454
COMMODORE CHIP Akron, OH 216-678-5033 *24
COMMODORE CLIPPER Akron, OH 216-928-4123 *24
COMMODORE COMMANDER Akron, OH 216-923-0347
THE COMMODORE CRUSADER, 216-864-8924 *24
COMMODORE EXPRESS Akron, OH 216-253-9247
THE COMMODORE GATEWAY, 216-896-9001 *24
COMMODORE RAINBOW Akron, OH 216-644-5771 *24
COMMODORE REALM Akron, OH 216-666-9463, 10pm-7am est.
THE COMPUTER EXPERIENCE, Cleveland, OH 216-946-9076 *24
COMPU-CENTER, Akron, OH 216-929-4803 *24
COMPUTER EXPERIENCE 216-946-9076 *24
COPLEY ATARI Akron, OH 216-666-8961
THE DARK TOWER Rogers, OH 216-227-3245 *24
DAYSTAR, Akron, OH 216-798-0937
DIAL-YOUR-MATCH -177 Cleveland, OH 216-481-9476
FEDATA BBS, Cleveland, OH 216-476-1151 *24
FIRECOMM Akron, OH 216-666-0306
FIRESTONE PARK ATARI Akron, OH 216-724-7760
THE FOURTH DIMENSION, 216-644-4597 *24
FORUM-80 Cleveland, OH 216-943-2388; 300/1200 baud
THE GOLDEN KEEP, 216-896-9147 *24
HENRIETTA OUTHOUSE,Oberlin, OH 216-965-8151 8pm-7am
MEGA-FORCE BBS Akron, OH 216-699-9055
NEW AGE BBS Cleveland, OH 216-451-3280
NIGHT STALKER Akron, OH 216-376-6443
PIRATES DELIGHT Akron, OH 216-672-7580 *24
PMS Massillon, OH 216-832-8392 *24
PMS RAUG Akron, OH 216-867-7463 *24
RAILNET BBS Cleveland, OH 216-883-6298 *24
RBBS Lorain, OH 216-282-3423
RUBBER CITY ATARI Akron, OH 216-376-7618
S.T.A.R. BBS -1, Akron, OH 216-753-1199 *24
S.T.A.R. BBS -3, Akron, OH 216-753-5379
TBBS of Akron 216-724-2125 *24
TBBS OF SOUTH SUMMIT Akron, OH 216-724-1963 *24
TBBS OF TALLMADGE Akron, OH 216-633-7483 *24
TECHIE Cleveland, OH 216-944-1072
TELETERM 64, Lorain, OH 216-282-8848; 8:00pm-6:00am
TIMEX BULLETIN SERVICE, Parma, OH 216-661-4105
T/P RBBS, New Philadelphia, OH 216-364-3103; 300/1200/2400 baud *24
UNDERGROUND 64 Lorain, OH 216-282-8848 8pm-7am days
VICCOMM Akron, OH 216-896-0775 *24

CCSH-1, Rantoul, IL 217-893-0453; TRS CoCo; 300 baud *24
ICCC RBBS, Mattoon, IL 217-235-2000; 300 BAUD *24
STARNET: ST ATARI NETWORK, 217-267-3530; 300/1200 baud *24
THE INFO SYSTEM, Effingham, IL 217-342-3613; 300/1200 baud; 5:30pm to 8:30am; *24 on Sunday
NETWORK: ATARI, Rantoul, IL 217-892-8889
STARNET (ST ATARI NETWORK), Westville, IL 217-267-3530; 300/1200 BAUD *24

BBS 219-422-9180 *24
DARK CASTLE Warsaw, IN 219-269-5957 *24
FREMONT TOWN CRIER BULLETIN BOARD Fremont, IN 219-495-9747; 3:00pm until 8:00am on weekdays and 24 hours on weekends and holidays
LBBS/PORTABLES Leesburg, IN 219-594-5843 *24

DIAL-YOUR-MATCH -214 Olney, MD 301-774-5776
DIAL-YOUR-MATCH -230 Gaithersburg, MD 301-330-2784
HIDDEN REALM Glen Burnie, MD 301-768-1636; 300/1200 baud; Atari; *24

ATLANTIS, Dover, DE 302-674-0859; Franklin Computer; 6pm-7:30am. *24 weekends
OOP'S DEPT., Dover, DE 19901 302-736-6616; 300/1200 baud; *24
OOP'S DEPT., (Line 2) 302-736-6613; 300/1200 baud; 9pm to 8am
PC-PLAYTIME 302-328-7107 *24
THE WHOLE APPLE Dover, DE 302-734-1766; Apple IIe; 7pm-7am Monday-Friday *24

ATLANTIS BBS Littleton, CO 303-973-0369; 300/1200 baud *24
AURORA-NET, 303-680-9292
AURORA NETWORKS Denver, CO 303-343-8401 *24
COLORADO'S 1ST NOCHANGE!, Fountain, CO 303-382-8326; 300/1200 baud *24
DATA LINK COMPUTER WAREHOUSE Denver, CO 303-934-3693
DIAL-YOUR-MATCH -118 Littleton, CO 303-796-9721
DIVE LINK FIDO 104/610; Denver, CO 303-252-9235 *24
INTRODUCTIONS UNLIMITED Pueblo, CO 303-544-1478; 6 to midnight on weekdays and *24 on weekends
SKYLINE, Northglenn, CO 303-457-0320 *24
VILLA TI, Colorado Springs, CO 303-574-2567; 300/1200 BAUD *24
BIT BUCKET Parkersburg, WV 304-295-6502; 300/1200 baud
GRAFIX CONNEXTION, Charleston, WV 304-768-9360; 300/1200 BAUD; Commodore 64 *24

ACES BBS, Ft. Lauderdale, FL; N. Broward/S. Palm Beach access: 305-483-8426 or S. Broward/N. Dade access: 305-431-5189; 300/1200 baud; *24
ADULTS ONLY I TBBS, Miami, FL 305-935-1136 *24
ADULTS ONLY II TBBS, Miami, FL 305-594-4526 *24
ALIEN UFO BBS, Titusville, FL 305-268-3690 *24
ALTERNATIVE UNIVERSE, 305-793-2975; Atari Only
AT-101-ES, Orlando, FL 305-281-0137; Apple
THE ATARI COMPUTER CLUB OF THE PALM BEACHES, 305-585-7879 3pm-8am
BACKSTREETS, 305-937-2838 *24
BBCS PALM BAY, Palm Bay, FL 305-984-7744; 300 baud; Atari *24
BBS, Vero Beach, FL 305-231-6435
CAVE, Hollywood, FL 305-961-8685; 300/1200 BAUD *24
COMM-LINK 99 (TIBBS), Altamonte Springs, FL 305-682-1526; 300/1200 BAUD
COMPUTER HUSTLER BBS Satellite Beach, FL 305-777-3664; 300/1200 baud; Tandy 1000 and IBM *24
DIAL-YOUR-MATCH -81 Sunrise, FL 305-741-5860
DIAL-YOUR-MATCH -250 Delray Beach, FL 305-272-6656
DIAL-YOUR-MATCH -305 N. Palm Beach, FL 305-845-6488
DR. DATA CBBS-RCP/M, Sunrise, FL 305-741-0835; 300/1200 BAUD *24
FIDO BULLETIN BOARD Boca Raton, FL 305-391-8504; 1200 baud; 18:30-09:30 Monday thru Thursday, *24 weekends
N.O.R.A.D. Miami, FL 305-633-0636; IBM PC; 300/1200 baud *24
PARTY-LINE, Kissimmee, FL 305-847-2056; Atari *24
PC-RAIN/NODE IV Boca Raton, FL 305-994-3644

THE JAIL BBS Regina, Saskatoon, Canada 306-569-8204; 300/1200 baud *24

THE TRADING POST, East Moline, IL 309-755-6684; 300/1200 BAUD; 8pm-2pm
THE WAR-ZONE BBS, East Peoria, IL 309-699-0901

ANLN Chicago, IL 312-253-9789 *24
The BASIC BBS Aurora, IL 312-896-9628 3pm-11pm; 300/1200 BAUD; TRS-80
CHICAGO SYSLINK, Chicago, IL 312-622-4442; 300/1200 BAUD *24
DIAL-YOUR-MATCH -39 Chicago, IL 312-243-5135
DIAL-YOUR-MATCH -59 Schausburg, IL 312-289-4973
DIAL-YOUR-MATCH -63 Elgin, IL 312-888-3616
DIAL-YOUR-MATCH -70 Lake Villa, IL 312-690-1132
DIAL-YOUR-MATCH -98 Roselle, IL 312-351-1588
DIAL-YOUR-MATCH -102 Riverdale, IL 312-841-6519
DIAL-YOUR-MATCH -110 Chicago, IL 312-256-3995
DIAL-YOUR-MATCH -231 Detroit, MI 312-849-0499
DIAL-YOUR-MATCH -295 Chicago, IL 312-523-4904
EL INFIERNO, Waukegan, IL 312-623-1545; 300/1200 baud *24
LINCOLNET Maywood, IL 312-343-0100
LOST CARRIER BBS Chicago,IL 312-735-4679 *24
MACROPEDIA BBS, Lake Forest, IL 312-295-6926; 300/1200/2400 BAUD *24
NESSY I. GAME SYSTEM BBS Itasca, IL 312-773-3308; 300 baud; Apple 10am-1am
NESSY II. GAME SYSTEM BBS, Lake Villa, IL 312-356-6897; 300 baud; Apple *24
ORGASM! BBS, Chicago, IL 312-772-2452; 300/1200 BAUD *24
SKI'S LODGE, Willowbrook, IL 312-282-9272
STARFLEET COMMAND Roselle, IL 312-894-0271; 300/1200 buad; Atari *24
SYSLINK Chicago, IL 312-622-4442; 300/1200 BAUD
WILD BILL'S BBS, Chicago, IL 312-873-8360; Commodore 63 *24
YE OLDE ARCHIVE 312-276-4159; IBM-PC & Compatibles; 1200/8/N/1 *24

DIAL-YOUR-MATCH -37 Flint, MI 313-736-1398
DIAL-YOUR-MATCH -231 Detroit, MI 313-849-0499
HIGHWAY 61, Dearborn Hgts, MI 313-274-3206; Apple; 300/1200 BAUD *24
LAKESIDER DATA STATION Grosse Pte., MI 313-881-7998; 110/300/1200 BAUD TRS-80 *24
NORTHERN GENESEE COUNTY BBS Clio, MI 313-687-0050 *24

NAUTILUS SOFTWARE-EAST, Mexico, MO 314-581-6762 1200/2400 baud *24

DIAL-YOUR-MATCH -279 Clay, NY 315-699-6263

ILION DATA SCIENCE Ilion, NY 315-895-7951 *24
MINI-SYSTEMS Walworth, N.Y. 315-986-5828; 300/1200 baud *24

ATLANTIS, Wichita, Kansas, 316-721-4339
BUSINESS PERSONS' LUNCH Wichita, KS 316-685-1205
C.S.W. 316-942-8746
COMMODORE BBS Wichita, KS 316-683-7848 *24
FORUM-80 Wichita, KS 316-682-2113 *24
GREAT INLAND SEA BBS 316-685-1188 6pm-8am
MOUSE EXCHANGE Wichita, KS 316-685-1190
NAUTILUS SOFTWARE, Iola, KS 316-365-7631 1200/2400 baud *24
OMEGA BBS Wichita, KS 316-685-8202
PANTHER I Wichita, KS 316-687-1268
SPECTRUM Wichita, KS 316-945-0882 *24
TIBBS Wichita, KS 316-681-3167
TIBBS Wichita, KS 316-681-3167 *24
UNION STATION BBS Wichita, KS 316-262-0819
W.O.P.A. Wichita, KS 316-683-0160
WOLF'S DEN, 316-838-9456
THE WOODSHED Wichita, KS 316-524-9069

THE ATARI HABIT BBS, Indianapolis, IN 317-899-1878 *24
BIBLE BULLETIN BOARD, Galveston, IN 317-452-1535; 300/1200/2400 baud *24
C*H*U*G BBS, Greenfield, IN 317-898-5027; 1200/300 baud *24
FOUNDATION'S EDGE, Muncie, IN 317-759-8258
THE FRAT HOUSE Marion, IN 317-664-8313
ICCC HOTLINE BBS Lawrence, IN 317-873-5808; 300/1200 baud; TRS-80 Color
THE MUNCIE TOWN CRIER Muncie, IN 317-759-6893 *24
THE TELETRON NETWORK, Crawfordsville, IN 317-866-1527

BAYOU TIBBS Lake Charles, LA 318-474-6144 *24
DRAGON'S DEN Shreveport, LA 318-687-4648; C-64 *24
POWERSTATION, Shreveport, LA 318-798-1399; C-64 *24
SOFT FIDO Shreveport, LA 318-636-4402; IBM, Apple, C-64; 300/1200 baud *24
STELLAR EMPIRE New Iberia, LA 318-367-8860; 300 baud *24
THE TOWNE CRIER BBS, Church Point, LA 318-684-3244 9pm-6am

COMPUCENTER IOWA 319-338-2750 300/1200 Baud Upload/Download
DICK DAVIN REALTY Iowa City, IA 319-338-3947; 300/1200 BAUD *24

NARRAGANSETT BAY ROS Newport, RI 401-683-9115; 300/1200 baud *24
NCCBBS I RI 401-847-8934 *24
PROTOTYPE -1 401-568-4163
PROTOTYPE -2:DRAG-NET 401-568-2343
PROTOTYPE -5:THE STAIRWAY 401-568-4164
THE SHORE BBS, Wyoming, RI 401-364-9788 *24
SYSLINK Providence, RI 401-272-1138; 300/1200 baud *24

DIAL-YOUR-MATCH -114 Omaha, NE 402-734-4748
DIAL-YOUR-MATCH -116 Omaha, NE 402-556-4241
DIAL-YOUR-MATCH -326 Lincoln, NE 402-477-0293

ADVERTISE ATLANTA BBS Atlanta, GA 404-928-9311; 300/1200 baud *24
CHETA COMMAND BASE Augusta, GA 404-860-1135 *24
COMPUTER CORNER INFORMATION SERVICE La Grange, GA 404-883-7038 6pm until 10am daily
NOCHANGE Roswell, GA 404-396-2517; 300/1200/2400 baud;*24
R.B.B.S. SYSTEM Atlanta, GA 404-934-1983
TBBS THE COLUMBUS CONNECTON; Columbus, GA 404-687-7309
TRI-STAR, Marietta, GA 404-587-2384

COCONET BBS, Midwest City, OK 405-376-1494 *24
DUCKNET, Lawton, OK 405-355-9678; 10pm-4pm Daily
THE LAND OF MACINTOSH Ada, OK 405-436-1792; 300/1200 BAUD
TRIAD BBS Ponca City, OK 405-765-2598; 300/1200 baud *24

LAKEVIEW BBS, Billings, MT 406-252-8586
MON-DAK BBS Sidney, MT 406-482-7048

AMPRO/ZCPR3 408-258-8128; 1200 baud *24
ATLASMICRO 408-379-8086; 2400 baud *24
BAAUG, Palo Alto, CA 408-578-2390; Atari; 300 baud *24
BAHIA BBS 408-353-4531; Religious; 300 baud
BIZCOMP BBS 408-720-9212; business; 1200 baud *24
BULLET 80 Cupertino, CA 408-255-8919
CALTEX 99 San Jose, CA 408-926-8767; TI/99 *24
CALTEX 99 Santa Clara, CA 408-296-6533; TI/99
CATS Los Gatos, CA 408-356-8902; 300 baud
CAVES OF APTOS Freedom, CA 408-688-5165
CENTER 2000 S'Cruz, CA 408-429-3421
CLEO 408-294-2000; business
COMPUTER FOR CHRIST 408-997-2790; religious
COMPUTER BOOKSHOP 408-730-9959; Confer Tree
COMPUTER TYME 408-732-2187; IBM
CRYSTAL CASTLE 408-733-1364
CSIRI 408-269-7045 *24
DIAL-YOUR-MATCH -56 Sunnyvale, CA 408-736-7356
DIAL-YOUR-MATCH -268 Sunnyvale, CA 408-733-6266
DIAL-YOUR-MATCH -296 Sunnyvale, CA 408-720-0724
DIGIKRON-ZNODE-25 408-253-1309; 1200 baud; Macintosh *24
DRAGON's LAIR 408-996-7464
EMBUG 408-646-8171; 1200 baud *24
EMPIRE 408-426-6049; 1200 baud; IBM *24
ETCETERA! 408-978-3282; 1200 baud *24
FOG -32 San Jose, CA 408-971-6536; 1200 baud *24
FOG -32 Monterey, CA 408-722-5653; 1200 baud *24
FUTURE POS Los Gatos, CA 408-356-0567 *24
GENERAL STORE, 408-253-8528; Apple; 300 baud
HARBOR II 408-243-2370; 300 baud
HARBOR III 408-997-3486
HOME BOARD 408-294-1454; 300 baud; business
HP-BBS 408-747-1243; 1200 baud *24
HUG San Jose, CA 408-262-5150
ITSY BITSY BBS 408-298-6930; Atari
THE JAIL HOUSE Carmel Valley, CA 408-659-3373; 300 baud *24
KEEP AT SAMA S'Cruz, CA 408-688-9629
MAN O' WAR 408-243-2370; 1200 baud *24
MAXBBSS MICROBUR BBS 408-629-2277
MCI/GOLIATH 408-379-8086
MERLIN'S CASTLE 408-578-1563
MILPITAS TBBS 408-942-8164
NCR USERS 408-744-0556; 1200 baud *24
NOCAL L5 408-778-3531; 1200 baud *24
NON-SMOKERS BBS 408-226-5209; 1200 baud *24
OXGATE 408-354-5934 *24
OXGATE-002 408-263-2588
OXGATE-dBASE II 408-378-8733 *24
PICONET -4 San Jose, CA 408-281-7059
PMC-M 408-737-7362; 1200 baud *24
POTPOURRI San Jose, CA 408-378-7474; 2400 baud *24
PRO BONO BBS 408-372-8737
SAILORS REFUGE 408-262-3963; 300 baud; C64 *24
SANTA CLARA RBBS 408-247-2853 *24
SERVU San Jose, CA 408-238-9621; 2400 baud *24
SHARK'S HEAD BBS 408-247-4810; 1200 baud
SIMMS-1 HQ Sunnyvale, CA 408-732-9190; 1200 baud *24
SPACENET 408-262-7177 *24
STRONGHOLD 408-429-6644; 1200 baud
STUART II 408-338-9511; Apple; 1200 baud *24
WEST COAST COLOR 408-984-7937 *24
WILD BILL's San Jose, CA 408-947-8038
Z-NODE -35 Sunnyvale, CA 408-245-1420; 1200 baud *24

ASTRAL RIFT BBS, Conroe, TX 409-273-5128; 300/1200 BAUD *24
SILVER STREAK, Vidor, TX 409-768-1444; Apple BBS/AE; *24

ATARI ELITE Pittsburgh, PA 412-384-5609
LIMELIGHT BBS Pittsburgh, PA 412-531-0137 *24
PENN-COMM BBS, Uniontown, PA 412-437-8286 *24
PITTSBURGH ATARI COMPUTER ENTHUSIASTS BBS, Pittsburgh, PA 412-963-1355; 300/1200 BAUD *24
PUBLIC DOMAIN WAREHOUSE 412-364-6452; 300/1200 BAUD *24
USER COMMUNICATION SYSTEM/IBM-PC, Pittsburgh, PA 412-276-1269; 300/1200 BAUD *24

CUL-DE-SAC West Southwick, MA 413-569-0550; 300/1200 baud *24

A.N.P.B.B.S. Milwaukee, WI 414-744-0691; 300 baud
GRAND CENTRAL STATION, Waukesha, WI 414-547-0729; 9p-3p weekdays; 10p-10a weekends; EBBS
MODEM-VADERS Racine, WI 414-633-2285; 300 baud *24
OSHKOSH ON-LINE, Oshkosh, WI 414-426-5672
TI-MIL, West Allis, WI 414-259-0190
UNCLE DAVE'S BBS Lake, WI 414-843-4029 *24

LL11
ALPHA CENTARI El Sobrante, CA 415-222-2858; 300/1200 BAUD *24
BUG'S NET El Cerrito, CA 415-236-1823; HP3000/IBM PC; 300/1200/2400 baud *24
DIAL-YOUR-MATCH -17 Daly City, CA 415-991-4000
DIAL-YOUR-MATCH -56A Mountain View, CA 415-964-3255
OPEN CAMPUS GBBS, San Leandro, CA 415-895-0135; 300/1200 baud *24
XT CLONE USER GROUP BBS, San Francisco, CA 415-552-9070 *24

EPSNLINK, Willowdale Ontario Canada 416-635-9600

WEBB WRITERS ELECTRONIC BULLETIN BOARD Branson, MO 417-546-2118 *24

COMMODORE'S BAND, Mansfield, OH 419-589-2567
DIAL-YOUR-MATCH -280 Spencerville, OH 419-697-6635
SOFTEX BBS, Findlay, OH 419-422-2313; 300/1200 baud *24

C.I.A. BBS, Mayflower, AR 501-470-0624; Commodore *24
COBBS -41 501-857-3138; 300 baud; 8am-8pm 7 days a week
99 HILLBILLIES HOLLER BBS, Botkinsburg, AR 501-745-2362; 300/1200/2400 baud; TI 99/4A *24
RCP/M CBBS LR CP/M UG Little Rock, AR 501-378-7723-continuous; 300/1200 baud
WHBBS, West Helena, AR 501-572-2710; 300 baud *24

ALTAIR VI, Hopkinsville, KY 502-886-9089; 6pm-4am daily
THE COAL MINE BBS Central City, KY 502-754-1390; 300 baud; TRS 80, all computer types welcome *24
THE FIFTH PRECINCT Louisville, KY 502-245-8270; 300/1200 *24
HACKNET AMERICA Hopkinsville, KY 502-885-5429; 7pm-7am daily
SAVAGE BBS, Ft. Campbell, KY 502-439-6968 *24

ALTON RCP/M 300 Baud, North Bend OR 503-756-7883; 300/1200/2400 baud; *24
COMMODORE/PDX BBS Portland, OR 503-284-3624 or 503-620-6642
IBBS, Portland, OR 503-292-1321
THE MIDNIGHT VORTEX! Central Point, OR 503-664-3756; 300/400/1200 baud *24

THE ASYLUM, Sun, LA 504-886-3713 *24
BBS 504-261-6202; 300/1200 baud *24
CHEERS 504-851-0303; 300/1200 baud N-8-1; Weekdays 5pm-10pm; Weekends Noon till 11pm
CHEERS II 504-594-9592; 300/1200 baud N-8-1; Weekdays 5pm-10pm; Weekends Noon till 11pm
THE COMMODORE ZONE 504-486-2242 *24
THE CURTAIN CALL TBBS SYSTEMS, Houma, LA 504-851-4857 *24
THE IMPOSSIBLE DREAM Houma, LA 504-851-5190; TI 99/4A; 300/1200 baud *24
NICHOLLS STATE UNIVERSITY BBS, Thibodaux, LA 504-448-2886; 300/1200 baud *24
WBUG I, New Orleans, LA 504-368-4938
WBUG II, New Orleans, LA 504-348-4493
WESTMINSTER MALL, Baton Rouge, LA 504-924-5092 *24

DIAL-YOUR-MATCH -104 Alanogordo, NM 505-434-3082
DIAL-YOUR-MATCH -133 Bosque Faras, NM 505-869-3546
DIAL-YOUR-MATCH -211 Alanogordo, NM 505-437-3749
ELECTRONIC WASTELAND Roswell, NM 505-624-1964
MTBBS, Hobbs, NM 505-392-2447
SANTA FE MESSAGE, Santa Fe, NM 505-988-5867; 300/1200 BAUD *24

XANADU St Peter, MN 507-931-5879; 300 baud

THE 64th PARALLEL/128th CONNECTION, San Antonio, TX 512-688-3129; 300-500/1200 baud; *24
THE COMMUNICATION SYSTEM San Antonio, TX 512-822-6235
DATABANK BBS 512-992-6441; 300/1200/2400 BAUD *24
DATABANK II 512-643-2251; 300/1200 BAUD *24
DAYTIMER 512-991-1343; 300/1200 BAUD *24
DIAL-YOUR-MATCH -38 Austin, TX 512-451-8747
DIAL-YOUR-MATCH -189 Austin, TX 512-477-7593
DRAGAONS LAIR 512-850-9400; 300 BAUD *24
HACKERS AND PIRATES BBS, 512-297-5590
MR. ROGERS NET 512-854-0155; 300 BAUD *24
THE NET 512-854-9020; 300/1200 BAUD *24
THE OUTPOST 512-992-4782; 300 BAUD *24
SPACE CANTINA 512-884-5115; 300 BAUD *24
SUPERNET 512-991-5786; 300/1200 BAUD *24
TRADE-80 Kinsville, TX 512-592-1214 *24
WILLOW CREEK 512-643-2471; 300 BAUD *24

THE BEAR SWAMP BBS Marysville, OH 513-644-0714; 300/1200/2400 BAUD *24
CAREER BULLETIN BOARD Cincinnati, OH 513-271-7703; 300/1200 baud *24
THE UNDERGROUND, Dayton, OH 513-433-3232; Atari *24
XENET TELECOMM BBS, Xenia, OH 513-372-3373; 300/1200 baud; *24

DATAMATE Montreal, 514-645-9835
DISTRA-SOFT Montreal, Quebec, Canada 514-327-5764 *24
MICRO-DIAL, Montreal, Quebec, Canada 514-487-2792; 300/1200 baud *24
C.U.N.I. BBS, Mason City, IA 515-424-8029 *24
UPLOAD/DOWNLOAD ATARI, Marshalltown, IA 515-752-4099; 300 baud; 11pm Fri-6am Sat

BANDITS HIDEOUT Dix Hills, NY 516-643-4963; 300/1200/2400 baud *24
DIAL-YOUR-MATCH -97 Farmingdale, NY 516-293-0499
DIAL-YOUR-MATCH -262 S. Farmingdale, NY 516-293-8251
FALKENS MAZE BBS Long Beach, NY 516-431-3171; 300/1200/CAT202 *24
L.I.E.R., Long Island Epson RCP/M 516-536-1546; 300/1200/2400 baud *24
W.A.B.S. Port Washington, NY 516-944-9821

THE ALTERNATE SOUCE Lansing, MI 517-482-9927; 300/1200 baud *24
BENCHBOARD BBS, 300 BAUD. 517-394-2447 *24
THE CLUB NETWORK, 517-372-3131 *24

COMP-U CRAFTS CBM CONNECTION Gloversville, NY 518-725-2173 9pm-8am est.

BOB'S BORED BBS Woodstock, Ontario, Canada 519-537-2519; 300 baud *24

THE A & M CONNECTION, Biloxi, MS 601-374-5068 *24
FREE STATE BBS Ellisville, MS 601-477-9874; 300/1200 baud *24
TI EXPANSION BBS Jackson, MS 601-352-5089

ADAM 2 APPLE Phoenix, AZ 602-264-3800
CACTUS PATCH Yuma, AZ 602-344-8070; 300/1200/2400 BAUD *24
DCUG BBS Douglas, AZ 602-364-3960 *24
QUESTNET Tempe, AZ 602-968-0423; 300 baud *24

THE ELECTRONIC ORPHANAGE, 603-882-9312; 300/1200 BAUD *24
P.E.R.C.S., Greenville, NH 603-878-2642
QUAGMIRE (ATARI) Portsmouth, NH 603-433-1859 *24
SPECTRE BBS (ATARI) Portsmouth, NH 603-436-7475

WEST END 99 BBS Vancouver, British Columbia, Canada 604-669-7170; TI-99/4A; 300/1200 baud

DOCS BBS, Rapid City, SD 605-923-3727; Atari; 300 baud; Friday 11pm to Sunday 5pm

SUNY BBS, Binghamton, NY 607-777-3258; 300/1200 baud; TRS 80 Model 4; *24

ELECTRIC MAGAZINE, 608-784-6500; Commodore C-64 based *24

THE CASINO RBBS-PC, Atlantic City, NJ 609-652-6030; 1200/2400 BAUD *24
THE CAVE BBS, W. Trenton, NJ 609-882-9195; 300/1200 BAUD *24
DANTE'S INFERNO Glassboro, NJ 609-863-0005; 300/1200/2400 BAUD
RBBS THE COMPUTER CONNECTION, Voorhees, NJ 609-784-9404 *24
TGIF-THE FRANKLIN USERS BBS, Blackwood, NJ 609-228-7456
TRI-STATE INFORMATION Elmer, NJ 609-358-3965; 300/1200/2400 baud *24

ATARI BARN, Minneapolis, MN 612-521-5398; 300/1200 BAUD *24
MOTEL I Minneapolis, MN 612-788-7484; 300/1200 baud *24
PC TURNING POINT 612-926-5666; 300/1200 BAUD *24

ALI COMPUTERS Ottawa, Ontario, Canada 613-745-6372
ALLEYCAT Ottawa, Ontario, Canada 613-236-1145
APPLE CORE Ottawa, Ontario, Canada 613-224-9992
BIT BYTERS Ottawa, Ontario, Canada 613-446-6234
BNR Ottawa, Ontario, Canada 613-726-8120
CAVEMAN Ottawa, Ontario, Canada 613-829-5327
CBE/MAC Ottawa, Ontario, Canada 613-820-7537
CHAR'S LINE Ottawa, Ontario, Canada 613-723-1079
CODE CONJURERS Ottawa, Ontario, Canada 613-232-4650
COMPUCENTER Ottawa, Ontario, Canada 613-230-7154
CONTACT Ottawa, Ontario, Canada 613-836-7854
COYOTE Ottawa, Ontario, Canada 613-526-0062
CRACKERS 2 Ottawa, Ontario, Canada 613-820-3171
CUBBS Ottawa, Ontario, Canada 613-836-7667
DATA/SF NET Ottawa, Ontario, Canada 613-726-1100
DOC'S R CAN Ottawa, Ontario, Canada 613-825-0400
DRIE Ottawa, Ontario, Canada 613-990-5847
EATON'S Ottawa, Ontario, Canada 613-234-5488
ELECTRIC BLUE Ottawa, Ontario, Canada 613-737-7994
EXCELTRONICS Ottawa, Ontario, Canada 613-230-4594
THE EXCHANGE Ottawa, Ontario, Canada 613-592-0240
FAST 80 Ottawa, Ontario, Canada 613-741-6160
GWN Ottawa, Ontario, Canada 613-829-0827
HEATH BOARD Ottawa, Ontario, Canada 613-829-0539
INFO CENTRE Ottawa, Ontario, Canada 613-990-9774
INPUT Ottawa, Ontario, Canada 613-594-3349
JITA Ottawa, Ontario, Canada 613-737-9380
LATENIGHT Ottawa, Ontario, Canada 613-731-8492
LE GAULOIS Ottawa, Ontario, Canada 613-824-9030
LIVE WIRE Ottawa, Ontario, Canada 613-521-1756
MAC BBS Ottawa, Ontario, Canada 613-829-0259
MAC WAREHOUSE Ottawa, Ontario, Canada 613-824-4383
MEDIALAND Ottawa, Ontario, Canada 613-820-7138
MICROCOM, INC. Ottawa, Ontario, Canada 613-727-1612
MISSING LINK Ottawa, Ontario, Canada 613-225-4523
MODEM WORLD Ottawa, Ontario, Canada 613-727-0575
MUCKBOX Ottawa, Ontario, Canada 613-729-9672
NCAUG Ottawa, Ontario, Canada 613-829-6641
OHCC Ottawa, Ontario, Canada 613-723-2252
OMFS Ottawa, Ontario, Canada 613-830-2823
OMX Ottawa, Ontario, Canada 613-731-3419
ORION I Ottawa, Ontario, Canada 613-445-5319
OTTAWA ONLINE Ottawa, Ontario, Canada 613-526-4141
THE OUIJA BOARD/TCC Ottawa, Ontario, Canada 613-837-8238
PEACH MICROSYSTEMS Ottawa, Ontario, Canada 613-232-7452
PROTON PALACE 3 Ottawa, Ontario, Canada 613-727-8148
THE RELAY 4.0 Ottawa, Ontario, Canada 613-830-5500

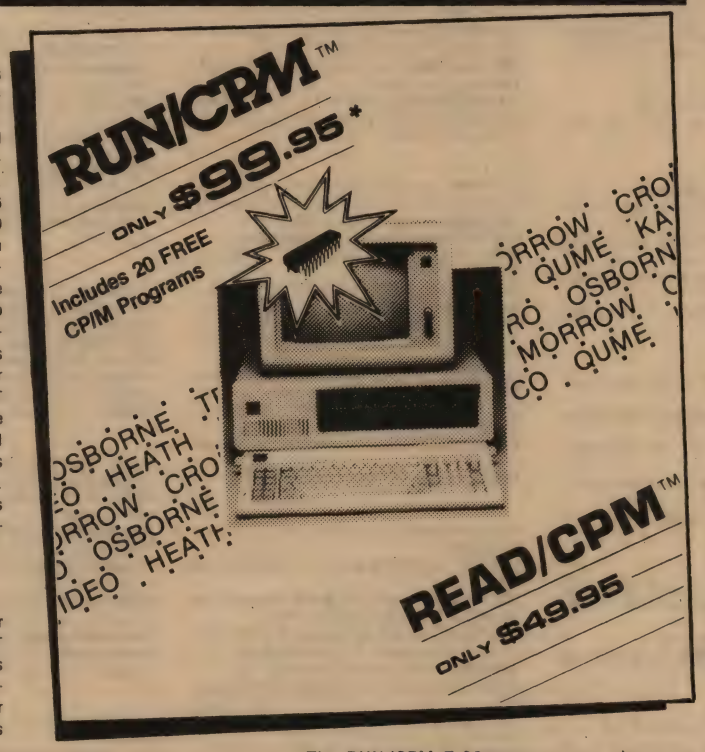
Put RUN/CPM™ in your PC today and run 50,000 programs that you couldn't run yesterday!

RUN/CPM V-20/30 CP/M Emulator

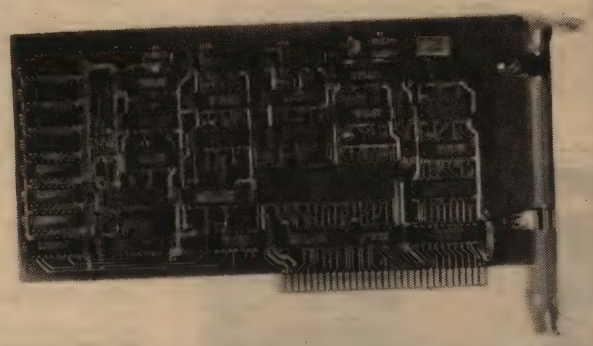
RUN/CPM is a revolutionary new product which combines software and hardware to allow your PC to run 1,000's of programs written for the CP/M80 operating system. For years, popular 8 bit computers such as "Kaypro", "Osborne", and "Morrow" have relied on this vast library of high quality, inexpensive software, which can now be accessed by your PC. A simple replacement of your ,PC's 8088 or 8086 microprocessor with a dual 8/16 bit N.E.C. V-20 or V-30 microprocessor creates a system capable of running both CP/M80, and MS-DOS/PC-DOS software. In addition to adding 8 bit CP/M compatibility, your PC's overall performance will improve by up to 30% as a result of the speedup characteristics of the V-20 and V-30 microprocessors. Running CP/M software directly from CP/M disks is easy thanks to RUN/CPM's disk emulation feature, which will allow your PC's floppy drives to directly READ, WRITE, and FORMAT over 175 different CP/M disk formats! You will also be able to run CP/M programs in full color, from a hard disk or RAM disk, and you can even run MS-DOS background programs such as Borland's "Sidekick" on top of CP/M programs!. Add pop-up windows, terminal emulation, and help screens and it is easy to see why RUN/CPM is fast becoming the defacto standard in CP/M emulation software.

READ/CPM CP/M Disk Emulation

READ/CPM adds CP/M disk compatibility to your PC, XT, or AT. Now your PC can directly READ, WRITE, and FORMAT over 175 different CP/M disks using DOS commands such as "COPY," "TYPE," "DIR" etc. READ/CPM supports a variety of disk drives including 5¼", 3½", and with the proper disk controller even supports 8" disk drives, READ/CPM is the solution to your disk compatibility problems.



Run CP/M® Z80 for the incredible price of $199.95



The RUN/CPM Z-80 co-processor gives you all of the incredible features of RUN/CPM, plus the advantage of the full Z-80 instruction set at a price you can afford. Never before has it been easier to add Z-80 compatibility to your PC, XT, or AT. The RUN/CPM Z80 co-processor board comes complete with 64K of memory, a 5Mhz clock, and of course the incredible RUN/CPM emulation software. Plug this card into one of your PC's slots and within minutes you will be running the most powerful CP/M software available, including the most popular assemblers, compilers, debuggers, and wide variety of application programs such as word processors and spreadsheets. Our ISIS-II emulation option will even allow you to run "Intel" development languages on your PC, or AT. If you want to step up to the ultimate in high speed Z80 processing, then check out our RUN/CPM Z80-H full size co-processor available for only $499.95. Running in excess of 9mhz with 128 K memory on board, this co-processor virtually blows away the competition! Both the RUN/CPM Z80 & Z80-H co-processors come with the RUN/CPM emulator software and are backed by our 30 day money back guarantee.

* Requires V-20 or V-30 microprocessor

Here is what the reviewers are saying about "RUN/CPM."

"It's an excellent program backed by a knowledgeable company."
ROBERT ATHEY
Micro Times

". . . the most powerful of all the emulators reviewed."
TED DRUDE
Computer Shopper

I WANT TO ORDER!

To order by phone, or for a dealer nearest you,
CALL (800) 637-7226
Technical Info call (305) 823-8088

Copies	Product	Price	Total
___	RUN/CPM requires V-20/30	$ 99.95	___
___	RUN/CPM Z80 (Board 5mhz)	$199.95	___
___	RUN/CPM Z80H (Board 9mhz)	$499.95	___
___	READ/CPM	$ 49.95	___
___	V-20 8mhz - Replaces 8088 up to 8 Mhz	$ 24.95	___
___	V-20 5mhz - Replaces 8088 up to 5 Mhz	$ 14.95	___
___	V-30 8mhz - Replaces 8086 up to 8 Mhz	$ 29.95	___
___	V-30 10mhz-Replaces 8086 up to 10 Mhz (NEW)	$ 49.95	___
___	MICRUN80 (UDI) requires V-20/30	$450.00	___
___	MICRUN80 5 MHZ Z80 Board	$595.00	___
___	MICRUN80 9 MHZ Z80 Board	$995.00	___
___	MICRUN86 (UDI)	$450.00	___

B8

Sub Total ___

Add $5.00 shipping charge per order except for V-20/30 chips which include shipping. International orders add $10.00

Amt Encl ___

Payment - VISA MC MONEY ORDER C.O.D. - Add $3 dollars

Credit Card Expiration ___ / ___

Card # ___

Name ___

Address ___

City ___ State ___

Zip ___ Tel. ___ / ___

30 DAY MONEY BACK GUARANTEE ON ALL PRODUCTS. SOFTWARE IS NOT COPY PROTECTED.

Micro Interfaces Corporation
6824 N.W. 169th Street, Miami, Florida 33015
(305) 823-8088 — Telex 5106004680 MICRO INTER CO

OEM, VAR, Dealers, Inquiries Invited

RUN/CPM is a registered trademark of Micro Interfaces Corporation; Sidekick is a registered trademark of Borland International; Kaypro is a registered trademark of the Kaypro Corporation; Intel is a registered trademark of the Intel Corporation; CP/M is a registered trademark of Digital Research; Z80 is a registered trademark of the Zilog Corporation; ISIS-II & ISIS-III are registered trademarks of the Intel Corporation.

RUN INTEL SOFTWARE ON IBM PC's

Transform an IBM PC, XT, AT, or compatible into a totally integrated Intel Micro Development System, capable of running 8 bit ISIS-II, and 16 bit ISIS-II (UDI) software while remaining 100% MS-DOS compatible. MICRUN 80 and MICRUN 86 are Universal Development Interfaces which will allow you to increase your development capabilities with faster, more reliable and affordable PC based work stations. The MICRUN80 (UDI) utilizes the N.E.C. V-20/30 microprocessor to execute 8 bit Intel software on a PC, or XT, 2 to 3 times faster then an Intel MDS! For ultra fast execution speed, our Z80 co-processor version of MICRUN 80 runs in excess of 9 Mhz and is PC "AT" compatible. The MICRUN86 (UDI) is the perfect solution for running 16 bit ISIS-III software on PC's or XT's, and AT's and does not require any additional hardware. Both MICRUN80, and MICRUN86 come complete with a full featured communication program for transferring Intel software to your PC or choose our 8" compatibility option, which will allow you to connect an 8" disk drive to your PC and directly access single density 8" Intel format disks. Micro Interfaces Corporation has brought the power of Intel development to the PC, and in doing so provided you with an affordable alternative to the high cost of Intel development. To order, or obtain more information call the toll free number listed above or refer to the order coupon.

Bulletin Board

SPERRY BOARD Ottawa, Ontario, Canada 613-726-9427
TAROT Ottawa, Ontario, Canada 613-521-7004
TBC1 Ottawa, Ontario, Canada 613-820-4646
TBC2 Ottawa, Ontario, Canada 613-820-4669
TBC3 (1200) Ottawa, Ontario, Canada 613-820-0903
TBC3 (300) Ottawa, Ontario, Canada 613-820-0010
THEATRE OF PAIN Ottawa, Ontario, Canada 613-821-3206
TI 99/4a Ottawa, Ontario, Canada 613-738-0617
TWILIGHT ZONE Ottawa, Ontario, Canada 613-225-9074

THE DISK EXCHANGE BBS, 614-369-2636 *24
ELECTRIC CONNECTION Roseville, OH 614-697-7075; Commodore & Atari 4:00pm Saturday to 4:00 am Sunday
UP-N-RUNNIN' BBS Mt. Vernon, OH 614-397-1069

COBRA, Clarksville, TN 615-645-8632 *24
COCO PALACE, Morristown, TN 615-581-9752 *24
COMMODORE BBS Newport, TN 615-623-2730; *24 weekends
FT. APOCALYPSE, Clarksville, TN 615-387-2467 *24
GALAXY WORLD BBS Chatti, TN 615-899-5757 *24
JOVID B. LEIGHFORD TECHNOLOGIES RBBS, 615-821-JBLT (5258); 1200/2400 BAUD *24
KENTUCKIAN RCPM-RBBS Ft. Campbell, KY 615-431-6247 *24
MUSIC CITY MACINTOSH (MCMac), Nashville, TN 615-822-6741; Macintosh
THE OMAGA BOARD Five Points, TN 615-852-4417; 300 baud; 9pm-6:30am central
OWL'S NEST Ft. Campbell, KY 615-431-6247 *24
SYD'S IBM BBS, Knoxville, TN 615-693-4711; 300/1200 baud; *24
T.A.B.B. Cleveland, TN 615-472-5151 *24

BATTLE CREEK CENTRAL Battle Creek, MI 616-962-0400
EVANS BBS 616-696-2811; C64
GRAND RAPIDS TURBO BBS, Kentwood, MI 616-455-6870
MULTIBOARD Holland, MI 616-335-8044; Amiga, Apple, IBM, TRS *24
OUTER LIMITS, Grand Rapids, MI 616-281-4327; PCjr and Tandy 1000; 300/1200 BAUD *24

CUL-DE-SAC Holliston, MA 617-429-1784; 300/1200/2400 BAUD *24
DIAL-YOUR-MATCH –85 Worcester, MA 617-792-6234
DIAL-YOUR-MATCH –215 Westport, MA 617-996-8699
DIAL-YOUR-MATCH –284 Hyde Park, MA 617-361-5459
GOSUB TRS-80 BBS, Worcester, MA 617-756-1442; 300 baud
THE INFO DIRECTORY Boston, MA 617-247-3048; 300/1200 BAUD *24
NCCBBS II MA 617-675-5979 *24
PROJECT CROSSBOW, Somerville, MA 617-623-3244; 300/1200/2400 baud *24
THE SPRING-BOARD, Fall River, MA 617-675-5979; 300/1200 baud; *24
UNICORN'S INN TBBS 617-479-3432; 300 baud
WORD WRAP, S. Attleboro, MA 617-761-9036
YELLOW DATA, Belmont, MA 617-489-4930 *24

BLACK FORTRESS, Belleville, IL 618-398-7608 *24
BOARD FOR THE BORED, Belleville, IL 618-235-9057 *24
THE CAVERNS OF QYU, Mt. Vernon, IL 618-242-2252; Monday thru Saturday *24
COMLINK, Collinsville, IL 618-344-3907 *24
COMM CENTRAL Fairview Hts., IL 618-624-6248
GALAXY 1, Belleville, IL 618-234-6632 *24
GARDEN OF EDEN Belleville, IL 618-235-2814 *24
HELLTOWN, Belleville, IL 618-234-8824 *24
INNERCIRCLE BBS, Salem, IL 618-548-6904 7pm-7am
THE MENEGERIE SAFB, IL 618-744-1512
MICROCOMPUTER USERS GROUP BBS Robinson, IL 618-544-7533; 1200/2400 baud *24
NATIONSERV, Fairfield, IL 618-847-2291; 300/2400 baud *24
S.O.S. BBS, Fairview Hts., IL 618-624-6248 *24

THIS 'N THAT, Belleville, IL 618-277-9726 *24
VORTEX INFO SYSTEM, Highland, IL 618-654-4729
WARLOCKS CASTLE Collinsville, IL 618-345-6638; 618-345-4108; 618-345-6234 *24

ANLN San Diego, CA 619-723-8996 *24
CONNECTION-80 Escondido, CA 619-746-6265
DIAL-YOUR-MATCH –148 Vista, CA 619-727-6431
DIAL-YOUR-MATCH –153 San Diego, CA 619-272-1503
DIAL-YOUR-MATCH –183 San Diego, CA 619-695-2533
DIAL-YOUR-MATCH –225 Escondido, CA 619-746-6751
DIAL-YOUR-MATCH –320 Imperial Beach, CA 619-428-0318

COLORAMA, Minot, ND 701-839-7081 *24
The Disconnection Bismarck, ND 701-222-3385; Commodore *24

ARMUDIC BBS Burke, VA 703-569-8305 *24
ATARIST BBS, Falls Church, VA 703-532-4836; 7pm-8am weekdays; *24 weekends
COMPUCENTER NCTCUG 703-836-0384; 300/1200 BAUD *24
CORVETTE DRIVER'S BBS Woodbridge, VA 703-590-9206; IBM; 300/1200/2400 baud *24
EAST COAST FORTH BOARD, McLean, VA 703-442-8695; 300/1200/2400 baud; *24

THE 64 EXPRESS, Shelby, NC 704-484-3019; 300 baud; midnite til noon 7 days/week
ACCES TBBS Asheville, NC 704-255-0032; 300/1200 baud *24
THE APPLE CLUB BBS Charlotte, NC 704-527-6999; 300/1200 baud *24
TIE-TBBS Boone, NC 704-264-7381 3/1200/2400 BAUD *24

FISHERMEN'S SCROLL BBS, Sault Ste. Marie, Ontario, Canada 705-253-5366

DIAL-YOUR-MATCH –245 Santa Rosa, CA 707-528-7753
INFORMATION EXCHANGE, Yountville, CA 707-257-8456; 300/1200/2400 BAUD *24
SOFTY'S APPLE BBS 707-437-4334 *24
SURVIVAL COMMUNICATION FORUM, 707-545-0746; 1200 baud; Fido 125/7 *24

NOPARITY BBS St. John's NF 709-753-0196 *24

64 SWAP Houston, TX 713-896-8522; 300/1200 baud *24
DIAL-YOUR-MATCH –242 Houston, TX 713-963-0262
DIAL-YOUR-MATCH –266 Houston, TX 713-556-9341
MICROLOGIC SPRING, Spring, TX 713-353-5289
MONTROSE MAILBOX Houston, TX 713-527-8566; 300/8/N/1 *24

AMIGA INFORMATION NETWORK, San Clemente, CA 714-493-6094 *24
COMPUTER CONSULTANTS NETWORK Cucamong, CA 714-982-5994
DIAL-YOUR-MATCH –29 Irvine, CA 714-857-2470
DIAL-YOUR-MATCH –87 Midway City, CA 714-531-3847
DIAL-YOUR-MATCH –130 Santa Ana, CA 714-751-4860
DIAL-YOUR-MATCH –207 Garden Grove, CA 714-534-6467
DIAL-YOUR-MATCH –224 La Mirada, CA 714-739-8822
DIAL-YOUR-MATCH –324 Huntington Beach, CA 714-962-2242
GAMENET MULTIUSER BOARD Anaheim, CA 714-520-4263
GENIUS' PALACE Claremont, CA 714-621-2536; 300/1200 baud *24
THE PALACE HOTEL San Bernardino, CA 714-864-1907
TECHIE TURF 714-832-7811; 300/1200 baud *24
THE UNDERWARE BBS Alta Loma, CA 714-945-5078 *24

WOW/TBBS, Wausau WI 715-842-4850; 300/1200 baud *24

ADULT SMORGASBOARD Dunkirk, NY 716-886-0199
C.A.N. Rochester, NY 716-986-5828; 300/1200 baud *24
DIAL-YOUR-MATCH –239 Sanborn, NY 716-731-3152
DIAL-YOUR-MATCH –259 Rochester, NY 716-889-3571
COMPUTER CLASSIFIEDS Dunkirk, NY 716-886-0199
DIAL-YOUR-MATCH –298 SanBorn, NY 716-731-3152
ENTERTAINMENT BROADCASTING SYSTEM, Niagara Falls, NY 716-282-8264 *24
THE HACKER'S HIDEOUT Buffalo, NY 716-825-1127 *24
MATCHMAKER Rochester, NY 716-889-3571
THE MUPPET SHOW, North Tonawanda, NY 716-695-0027
THE OUTHOUSE BBS, Buffalo, NY; 716-838-1499

BYTE BUCKET, Lititz, PA 717-569-9967; 300/1200 baud *24
THE CARRIER 717-275-0666 *24
THE CONNECTION, Harrisburg, PA 717-652-4364 *24
THE CUMBERLAND COMMODORE Carlisle, PA 717-243-9620
THE ENCYCLOPEDIA GALACTICA Clarks Summit, P A 717-586-0221; 300/1200 baud *24
THE PARANORMAL BBS, Lansford, PA 717-645-4992; 9pm-9am; 7 days a week
SPY HEADQUARTERS, Harrisburg, PA 717-652-8710 *24
THE WIZARD'S KEEP, Harrisburg, PA 717-657-4997 or 717-657-4992; 300 BAUD *24

ELECTRONIC CALL BOARD Brooklyn, NY 718-499-1633
ENTREPLEX Bklyn, NY 718-743-2434; 300/1200 baud *24
THE HOTEL BBS, Queens, NY 718-381-2209 *24
KENNEDY AIRPORT Brooklyn, NY 718-963-2189 *24
NE-ON-LINE, Little Neck, NY 718-631-5945; 300/1200/2400 baud; *24
THE OUTER LIMITS BBS Brooklyn, NY 718-492-3054
WORLD OF KRYPTON 718-373-0623; 1200 baud *24

THE DOOR TO THE SOUTH, Simpsonville, SC 803-235-4972; 300/1200 baud
PEE DEE EXCHANGE RCPM/BBS Florence, SC 803-393-7399; 300/1200 BAUD *24
THE RAT'S NEST, Columbia, SC 803-788-6797; 300/1200 baud *24
SOUTHERN HOSPITALITY Columbia, SC 803-736-6066 *24

AVIATOR'S HAVEN, Chesterfield, VA 804-748-9236 or 804-590-9369
CHOCOLATE CONNECTION, Norfolk, VA 804-587-6255; C64 *24
THE DARK SIDE OF THE MOON, Hampton, VA 804-380-8344; Atari; 300/1200 BAUD *24
DIAL-YOUR-MATCH –272 Highland Spgs, VA 804-737-1364
HEART OF GOLD, Norfolk, VA 804-480-8550; C64 *24
INTERFACE, Norfolk, VA 804-857-4916; C64 *24
MS-BBS Newport News, VA 804-596-4838; 1200/2400 baud *24
NORTH END, Virginia Beach, VA 804-491-1437; Atari 800 *24
STATUS, Virginia Beach, VA 804-468-1096; Atari 800 *24
TEMPLE, Norfolk, VA 804-473-0643; Atari 800 *24
TIDEWATER CIRCUTBOARD, Virginia Beach, VA 804-467-0090; Apple II *24

A.V. ATARI BBS 805-946-2125; 9pm-6am PDT
BACE ATARI, Bakersfield, CA 805-397-0465; 300 baud; 6pm-8am T-Th; 6pm-8am Fri; 8am Mon
COMPUCENTER MERLIN 805-527-2527; 300 BAUD *24
COMPUCENTER OFFICE 805-527-0224; 300/1200 pm weekends
CTG/CCMUG Santa Maria, CA 805-925-0378; CP/M and MS/DOS *24
DIAL-YOUR-MATCH –275 Lancaster, CA 805-264-2228
DOWN THE RABBIT HOLE Oxnard, CA 805-984-3547; 300/1200 baud *24
THE MINE SHAFT BBS Canyon Country, CA 805-251-5297 *24
RBBS OXGATE Santa Barbara, CA 805-964-4115
SMLACE BBS Santa Maria, CA 805-934-1081; 300/1200 baud *24

ACes Amarillo, TX 806-371-5235; 300/1200 baud *24
A.E.R.I.E. Amarillo, TX 806-373-3953; 300/1200 baud *24
THE ATTIC Amarillo, TX 806-381-2932; 300/1200/2400 baud *24
THE BOARD Amarillo, TX 806-655-9936; 300 baud *24

BURG BOARD Amarillo, TX 806-374-9711; 300/1200/2400 baud *24
BYTE THE BULLET Amarillo, TX 806-381-8214; 300 baud *24
COMP BOARD Amarillo, TX 806-353-4804; 300/1200 baud *24
CROSSFIRE Amarillo, TX 806-352-5646; 300/1200 baud; nights
GOLDEN BILLBOARD Amarillo, TX 806-372-7883; 300/1200 baud *24
LOVE BOARD Amarillo, TX 806-355-3031; 300 baud *24
MIAMI VICE Amarillo, TX 806-353-1408; 300 baud *24
SOFBOARD Amarillo, TX 806-371-8900; 300/1200 baud *24

THE BOARD ROOM Fort Mill, SC 808-548-1243; 300/1200 baud; CP/M, MS-DOS & other files
BYTES MADNESS Honolulu, HI 808-235-6768; 300/1200 baud *24
DATALOG, Wahiawa, HI 808-839-4382
DIAL-YOUR-MATCH –190 Honolulu, HI 808-841-3158
MAXIMUM SECURITY Honolulu, HI 808-422-2247; 300/1200 baud *24
OFF BROADWAY Honolulu, HI 808-623-9246; 300/1200 baud *24
POWER STATION Honolulu, HI 808-944-0539; 300/1200 baud *24
THE TOWN CRIER Honolulu, HI 808-235-5538; 300/1200 baud *24
WHOPPER Honolulu, HI 808-735-1952; 300/1200 baud *24
WONDERFUL WORLD OF OZ Honolulu, HI 808-423-2754; 300 baud *24

C-COMM BBS, Terre Haute, IN 812-446-2881; Atari *24
DIDDLY SQUAT, Terre Haute, IN 812-299-1821; Atari *24
DIMENTIA, Terre Haute, IN 812-877-3730; Apple *24
MINDSTORM, Terre Haute, IN 812-235-0908; Apple *24
PC-LINK CENTRAL Bloomington, IN 812-824-7990; 300/1200/2400 baud *24
PHOENIX, Terre Haute, IN 812-466-3478; Atari *24
TELERAP, Terre Haute, IN 812-232-0313; Commodore *24

AUGUST MOON BBS 813-671-1259
"C"-LION BBS Clearwater, FL 813-786-5460; 300 baud *24
COMPUTER CONNECTION Sarasota, FL 813-924-4590; 300/1200 baud *24
DIAL-YOUR-MATCH –258 Tampa, FL 813-977-5508
DYM-276 Naples, FL 813-455-8449 *24
THE INNER SANCTUM, Hudson, FL, 300/1200/2400 baud, 813-856-5071 *24
MICRO-VISION St. Petersburg, FL 813-526-3388; IBM & Compatibles; 300/1200/2400 baud *24
THE OUTING Lakeland, FL 813-683-0214; 300/1200 BAUD
RBBS-PC Lakeland, FL 813-683-0214; 300/1200 BAUD
STUDIO-64 Port Richey, FL 813-862-8806 *24

THE BYTE SHOPPE Corry Penna 814-664-2877; 300/1200 baud *24
THE PHOENIX SYSTEM Erie, PA 814-864-9117; 11:00pm-9:00am

DIAL-YOUR-MATCH –269 Plainfield, IL 815-436-3396

A-BUG Mission, KS 816-523-0304
FERNANDO'S HIDEAWAY, Sedalia, MO 816-826-8209

APCOM C.P.S. Monrovia, CA 818-357-7276 *24
BAYLOR USERS GROUP/COMPUTER CONCEPTS BBS Waco, TX 817-754-SWAP; 300/1200 baud *24
DATALINE Covina, CA 818-967-3108; Tu/Thr/Sat/Sun; 6pm-12 midnight
THE DUGOUT La Crescenta, CA 818-248-0562; 300 baud; 6pm-11pm
THE GATE, Gatesville, TX 817-865-5259; 300 baud; 6pm to 6am 7 days a week
TBBS FORTH WORTH Fort Worth, TX 817-232-2087 *24

APCOM C.P.S., Monrovia, CA 818-357-7276 *24
COMMODORE USERS CLUB Arcadia, CA 818-445-8079
DIAL-YOUR-MATCH –1 Burbank, CA 818-842-6900
DIAL-YOUR-MATCH –28 Winetka, CA 818-888-6600
DIAL-YOUR-MATCH –65 Van Nuys, CA 818-997-7575

DIAL-YOUR-MATCH –202 Encino, CA 818-345-0220
DIAL-YOUR-MATCH –203 Burbank, CA 818-954-0790
DIAL-YOUR-MATCH –210 Van Nuys, CA 818-785-3498
DIAL-YOUR-MATCH –219 N. Hollywood, CA 818-982-7882
DIAL-YOUR-MATCH –240 Canoga Park, CA 818-882-5571
DIAL-YOUR-MATCH –255 Burbank, CA 818-845-5325
IBM PC USERS CLUB Arcadia, CA 818-445-8072
MOG-UR's EMS Granada Hills, CA 818-366-1238; 300/1200/2400 baud
OLD HIPPY NETWORK, Rowland Hts., CA 818-965-7220; 300/1200 baud
ORACLE, North Hollywood, CA 818-980-6743
PRICE BUSTER CLASSIFIEDS Chatsworth, CA 818-709-4095 *24
SEE-YOUR-MATCH Arcadia, CA 818-445-0691

ACES Big Sandy, TN 901-593-5506; 300/1200 baud; 10pm-5am
GANYMEDE Memphis, TN 901-278-0167 ADULT *24
JOHN TODD BBS TN 901-635-0157; 300 BAUD, 6pm to 8:00pm Weekdays. 3:00pm to 5:00pm Saturdays. Board is not operational on Sundays
MASHCOM II Memphis, TN 901-872-2578 *24
TIBBS of Memphis Germantown, TN 901-357-5425

ATARI AMIS Mt. Dora, FL, 904-383-1133 *24
BRUCE'S BULLETIN BOARD Ft. Walton Beach, FL 904-862-9558; 300/1200 baud; *24
COMPNET Orange Park, FL 904-272-2293; 300/2400 BAUD
ESOTERIC ORACLE, Gainesville, FL 904-375-0059 *24
THE EXCHANGE! RBBS-PC, Tallahassee, FL 904-878-4413; 300/1200/2400 BAUD *24
HOT MUDDY DUCK Shalimar, FL 904-651-8684; 300/1200 buad; Amateur Radio, Computers *24
THE HOST BBS Pensacola, FL 904-478-4760; 300 baud; 10pm to 6am; 300 baud; 8,1,N; special interest bbs serving the blind and physically handcicapped.
ORANGE PARK COMMODORE-64, Orange Park, FL 904-264-5312; C-64; 300/1200 BAUD *24

APPLE BBS SCHOOL OF TECHNOLOGY Houghton, MI 906-487-2589 *24
GREAT WHITE NORTH, Marquette, MI 906-226-7240 *24
ARCANA Anchorage, AK 907-333-8100; 300 baud *24
ZEE ZOO RBBS Chugiak, AK 907-688-0143; 300/1200 baud *24

U.S.S. SARATOGA, Albany, GA 912-883-7297; C-64 *24

BLOOM COUNTY II Lawrence, KS 913-843-1312; 300/1200 baud

THE 64 UNDERGROUND, Yonkers, NY 914-237-8144; 300/1200 BAUD *24
THE ALTERLINK BBS, New Windsor, NY 914-562-7837; 300/1200/2400 baud; N-8-1 Only; IBM PC-XT; *24
BETA PROJECTIONS R.B.B.S. Middletown, NY 914-343-8292; 300/1200/2400 BAUD *24
THE BIRDHOUSE, Middletown, NY, 300/1200/2400 baud, 914-343-0727 *24
C.E.B.B.S., Middletown, NY 914-343-1031 *24
COMMODORE DOWN UNDER BBS, Wallkill, NY 914-895-2840 *24 weekdays; 9pm-9am weekends
DOWN-UNDER BBS Wallkill, NY 914-895-2840 *24
PC-RAIN/NODE I, 914-297-0665
PC-RAIN/NODE II Wappingers, NY 914-462-7674

BOOMTOWN PARTY BOARD, Odessa, TX 915-333-6224; 300/1200 BAUD; 7am-4am
KILONET El Paso, TX 915-755-1000; 300/1200 BAUD *24
STEP BULLETIN BOARD SERVICE El Paso, TX 915-751-STEP
TEXAS THUNDER, San Angelo, TX 915-658-7747; PC Related; 300/1200 BAUD

CHICO COLOSSUS Chico, CA 916-891-1800; 300/1200/2400 baud *24
CITADEL Chico, CA 916-894-6306; 300 baud *24
COMPUTERS PLUS Chico, CA 916-345-1722; 300/1200/2400 baud; 5p-8a; *24 Sundays
DIAL-YOUR-MATCH –197 Sacramento, CA 916-736-0739
FLYING CLUB Chico, CA 916-894-1960; 300/1200 baud *24
GRAND EXPERIMENT Chico, CA 916-891-1631; 300/1200 baud; 6p-9a *24 Sundays
HAUNTED BBS Chico, CA 916-345-1100; 300 baud *24
LEGAL BBS Chico, CA 916-894-0709; 300/1200 baud 6p-8a
THE MEETING PLACE Woodland, CA 916-662-1838; 300/1200/2400 BAUD *24
SAC TIBBS, Sacramento, CA, 300/1200 baud, 916-927-3012 *24

THE GCCA COMPUTERCENTER Tulsa, OK 918-245-3456; 2400 baud *24
GM SOFTWARE BBS Tulsa, OK 918-663-4356; 2400 baud *24
GREATER TULSA AREA BBS Tulsa, OK 918-663-7305; 2400 baud *24
IKE, Tulsa, OK 918-744-9456; 2400 baud *24
THE SLAMMER Tulsa, OK 918-585-2552; 2400 baud *24
TBBS TULSA Tulsa, OK 918-743-1345
THE TULSA PHANTOM Tulsa, OK 918-585-9437; 2400 baud *24

ALL AMERICAN BBS Spring Lake, NC 919-497-0989
THE BLUE DEMESNES 919-738-3756 7pm-8am est.
BULL CITY TIBBS Durham, NC 919-383-8707; 300/1200 baud *24
BURLINGTON BBS Burlington, NC 919-449-5773 *24
COM-NET, Jacksonville, NC 919-347-1946 *24
CRYSTAL COAST, Swansboro, NC 919-326-3740; 2400 BAUD *24
DIAL-YOUR-MATCH –322 Durham, NC 919-471-0556
DOWNEAST NOCHANGE BBS Greenville, NC 919-758-5261 *24
MICRO MESSAGE SERVICE Raleigh, NC 919-779-6674; 300/1200/2400 BAUD
WILMINGTON—80 BBS 919-763-1850; 300/1200/2400 baud *24

BBS OF ARGENTINA Buenos Aires Argentina 011-541-46-5236

COMPUTACION, PROGRAMACION, PROCESAMIENTO Buenos Aires, Argentina 46-5236

DIAL-YOUR-MATCH –229 ITALY-011392871128

PANAMA COMPUTER HACKERS (PCH-BBS), Panama City, Panama 64-4398; Apple; *24

wings West

More Compatible than the Laser 128 or Franklin 2000

APPLE IIE™ COMPATIBLE

Wings AP1
—99.9% Compatible
—Numeric keypad
$350

Wings AP2
—128K Ram, 80 Column
—Floppy disk drive
—Monochrome Monitor
$700

Wings West Computers

P.O. Box 241439
Los Angeles, CA 90024
(213) 829-4038
(213) 425-7373

OUTSTANDING PRICES ON IBM XT COMPATIBLE SYSTEMS!!

PRINTERS

Brother
M 1509 180cps,TF,SP,PP,NLQ $355
Panasonic
KX-1080 100cps, NLQ, GR $209
KX-1091 120 cps, NLQ, GR $239
KX-1092 180 cps, NLQ, GR $349
Panasonic 3131 lettr qty $259
KX-1592 15"180cps, NLQ, GR $425
KX-1595 15"240cps, NLQ, GR $579
Okidata
Okimate 20 IBM/APL $209
ML182P or IBM version $229
ML192P or IBM version $349
Star Micronics
NX-10 120 cps $256
SG 15" 120 cps ..... $CALL
Citizen
MSP-10 160 cps $259
MSP-15 160 cps $359

PRINTER ACCESS. for APPLE

Orange Micro
Grappler + ... $89
Buffered Grappler + w/16k $142
Serial Grappler + ... $89
Buffered Serial Grappler+ $159
Grappler C (ser to par) $89
Hotlink (ser to par converter) $59
SMT (3 year warranty)
Image Perfect w/Cable $59
Microtek
Dumpling GX $69
Dumpling 16 ..... $139

DISK DRIVES for APPLE

Mitac
Ad-1 Full Ht. for Apple IIe, II + ... $109
Ad-3 Half Ht for Apple IIe, II + ... $109
Ad-3C Half Ht for Apple IIc $115

APPLE COMPATIBLE HARDWARE

Applied Engineering (3 year warranty)
Transwarp 512k $179
Transwarp $229
IIC System Clock $63
Ramworks II w/64k $139
Timemaster H.O. $99
Ramworks II w/512k $199
RGB Option $99
Z-80 Plus w/software $119
Z-80C for IIc w/software $129
Viewmaster 80 col cd for II + ... $109
SMT (3 year warranty)
80 col card w/64k for IIe $59
Thunderware
Thunderclock Plus $126

IBM AT Compatible System Prices

AT Compatible System $1475
512K, Intel 8 MHZ 80286 CPU, Clock Calendar, 192W PWR supply, 1.2 Meg Fd, Floppy/Hard Disk Controller, AT Keyboard, Hercules compatible Monochrome graphics card, Hi/Res TTL mono monitor.

IBM XT COMPATIBLE SYSTEM PRICES

Standard System $799
256K 2 360 Drives, Keyboard, Monochrome Graphics Card with Parallel Printer Port, Hi/Res TTL Amber or Green Monitor.
With 20 Meg Hard Drive $1200

Deluxe System $879
640K, 2 360K Drives, Keyboard, Monochrome Graphics Card, 2 Parallel Ports, 2 Serial Ports, Clock Calendar, Game Port, w/ software, Hi/Res TTL Monitor.
With 20 Meg Hard Drive $1299

Color System $999
640K, 2 360K Drives, Keyboard, RGB Color Card, Parallel Port, Hi/Res RGB Monitor.
With 2 SP, PP, CC, GP $1079
With Above plus 20 Meg HD $1499

20 Meg System W/Tape BU $1549
640K, 1 360K Drive, Keyboard, Monochrome Graphics Card with Par Port, Hi/Res TTL Monitor, 20 Meg Hard Drive, 10 MB Irwin Tape Backup.
With 2 SP, PP, CC, GP $1629

GENERICS FOR IBM

Monochrome Graphic Card $90
Color Graphic Cd w/par Port $92
Color Card w/composite $82
Parallel Port $29
Serial Port $49
Parallel Printer Cable $10
1/0 w/PP.SP.CC.GP.SFT.000K $89
Mem Card EX to 512Kw/000K $59
I/0 Card w/PP.SP.CC.GP.SFT $85
Disk Controller Card $49
135 Watt Power Supply $65
IBM Style Case $40
IBM Style KB 5150 ..... $65
Keytronics Style 5151 Keybd $85
640K Motherbd 000Kw/bios $125
Seagate 20MB w/WDC $415

MODEMS

Anchor Automation
Anchor Express 1 internal IBM w/sft $175
Anchor Volks I Internal 1200B w/sft $149
Anchor 2400B internal $299
Anchor 2400 Baud external $359
Prometheus
ProModem 1200B (1/2 Card) w/o sft ... $189
ProModum 1200 External $279
Promodem 2400 External $369
Mitac
1200 Baud internal or external $149
Generic
1200B Hayes compt. 1/2-cd w/o sft ... $135
Novation
2400B Half-card w/o sft $439
Hayes
Smartmodem 1200 ..... $375
Smartmodem 1200B 1/2-card w/sft $349
Smartmodem 2400 ..... $575
Smartmodem 2400B w/Smartcom II $539

IBM COMPATIBLE HARDWARE

Paradise Systems
5 Pack Multifunction 000K $139
Ast Research
Preview w/Flight Simulator $229
Six Pack + w/sidekick 64K $165
STB
Chauffeur $199
Chauffeur HI $229
EGA+ EGA, CGA, 1-P $299
Microtec
GL 640+2MB 000K $149
Sigma Designs
Sigma 400 EGA $359
Video 7
EGA $379

SOFTWARE

"1 Dir" $59
Copy II PC $25
Clickart Personal Publisher $119
DBase II (Apple) $285
DBase III $369
Dac-Easy Accounting (IBM) $45
F-15 Strike Eagle (IBM) $24
Flight Simulator (IBM) $33
Flight Simulator II (Apple) $33
Managing your Money $105
Microsoft Windows (IBM) $59
Norton Commander $42
Norton Utilities Ver 3.1 ..... $49
PFS: Write (Apple) $69
PFS: Write (IBM) $79
Print Shop (Apple/IBM) ..... $31/$37
PrintMaster (Apple/IBM) ..... $25/$35
Sidekick (IBM) $35
Sideways (IBM/Apple) $35
Turbo Pascal (IBM/Apple) $49
Wordstar Pro (IBM/Apple) $259

MONITORS

Amdek
310A Hi/Res Amber TTL $147
600 Hi/Res Color RGB $399
Princeton Graphics
Max-12 Hi/Res TTL $149
HX-12 RGB IBM $409
HX-12e RGB IBM $519
Samsung
12" Hi/Res Amber TTL IBM $89
NEC
JC1401 Multisync $549
Thompson
CM 36512VI 560 x 246 14" $299
CM 36382SI 640 x 240 14" $379
Mitsubishi
12" Hi/Res RGB ..... $CALL
Computer Systems
IBM ..... $CALL
Compaq ..... $CALL
Kaypro ..... $CALL

LifeStyle Computer Products

25381-G Alicia Parkway • Suite 350 • Laguna Hills, CA 92653

FOR ORDERS ONLY
800-257-6094
FOR INFORMATION AND ORDERS INSIDE CALIFORNIA
714-855-0924

WE ACCEPT VISA, MASTERCARD, C.O.D., WIRE TRANSFER, MONEY ORDER, CERTIFIED OR CASHIER'S CHECK.
ALL PRICES REFLECT A CASH DISCOUNT, ADD 2% FOR VISA, MASTERCARD AND PURCHASE ORDERS.

VISA®

MasterCard

COMPUTER SHOPPER™ Software Mart

Software Mart is a new service to advertisers whereby high quality programs can be displayed in the most economical fashion and at the highest visibility. Please contact these and other advertisers telling them where in *Computer Shopper* you saw their advertising. Advertising inquiries about this software mart, which will appear monthly, should call: 305/269-3211.

"AMBIZ-PAK '86"™ *

COMPUTER PROGRAMS FOR Amway PRODUCT DISTRIBUTORS

OVER 1000 SOLD!

• ORDER VERIFY/GENERATE (400 PRODUCTS IN MEMORY) • DISTRIBUTOR BONUS CALCULATE/GENERATE • DISTRIBUTOR FAMILY TREE • MAILING LIST • 12-COLUMN LEDGER • MONTHLY GROSS PROFIT • WORD PROCESSOR • TELEPHONE PROGRAMS • OTHERS

IBM PC/jr/XT/AT/Compatibles
TANDY 1000/1200/2000
TRS-80 MODELS III/4/4P (III Mode)
SANYO MBC 550/555
ATARI 520ST/1040ST
CP/M MBASIC (Specify computer & format)

ANY VERSION $100.00
(Disk & detailed documentation)

DEMO-PAK $5 (Specify computer)

VISA

BLECHMAN ENTERPRISES
7217 BERNADINE AVE., #1 CANOGA PARK, CA 91307
(818) 346-7024
POSTPAID USA/CANADA FOREIGN ADD $2 CALIF ADD SALES TAX

* Amway has not reviewed or endorsed these programs

For the **AMIGA***

TRANS TEXT
$30.00

- FULL FEATURED TEXT EDITOR
- TEXT SIZE LIMITED ONLY BY DISK SIZE
- GLOBAL SEARCH & REPLACE
- INDIVIDUALLY ADJUSTABLE TABS
- EDITS EXISTING TEXT FILES
- USES AMIGA INTUITION FEATURES — Sound, Windows, Mouse or Keyboard Input
- NOT COPY PROTECTED
- INTEGRATION WITH FUTURE PROGRAMS — Trans Base, Trans Graph, Trans Com.

TRANS SOFT LABS
P. O. Box 5482
Texarkana, Texas 75505

*Amiga is a registered trademark of Commodore Business Machines.

LEGAL HELP—ON DISK!

MICROLAWYER™ FORMS are templates for most common legal forms. Compatible with popular word processors & includes complete, detailed instructions. Three versions with over 40 forms each.

- **PERSONAL:** wills, real estate documents, loans, marital agreements.
- **BUSINESS:** consulting agreement, leases, contracts, partnerships.
- **CORPORATE:** articles of incorporation, bylaws, meetings, stocks, notes.

Only $49.95 each version; S&H $3.50 per shipment. Specify computer, format, word processor.

Computer Systems Integration
POB 28113, Sta. #16, Area A
Lakewood, CO 80228
(303) 986-3102

New From Southside

BackGammon **$15**
Checkers **$15**
Bridge **$15**
Goren Convention
FortyTwo **$15**
National Game of Texas
TacTix **$10**
World's Oldest Game
Editor **$15**
Full screen editor maintains files in EDLIN format.
Symblor **$45**
Assembler and Debug used to develop our programs.

Southside Systems
Box 26554, Houston, TX 77207
(713) 641-2101
Specialists in Artificial Intelligence for the IBM-PC and compatibles, color or monochrome.

PC/MS-DOS & CP/M PUBLIC DOMAIN SOFTWARE

Download via your modem by telephone
We Always Have The Newest Programs!!
* TWO incoming phone lines
* 300/1200/2400 baud supported
* True **multi-user** message system
* 1,000s of programs online for Kaypro, IBM, Commodore C-128

Standard membership is $35.00 a year or V.I.P. (incl monthly disk) is $125/yr.

Hundreds of IBM & CPM disks available by mail as well, call by modem or write to:

Tampa Bay KUG/ DataCOM Super Systems
2643 Cedarview Court
Clearwater, Florida 33519
(813) 791-1454/1455 modem

IBM PC/XT KEYBOARD TEMPLATE

DOS/BASIC 2.0 — WORDSTAR
DBASE II — DOS VERSION 2.0/2.1
MULTIMATE — WORDVISION
SUPERCALC — MULTIPLAN
LOTUS 1-2-3 — VISICALC
WORD PERFECT — MULTIMATE new vers.
DBASE III — SYMPHONY
FRAMEWORK

SIZE 5 X 8 INCHES

Package of 15 plastic keyboard TEMPLATES organized by binder.

$39.95

REGINA CO.
2579 42nd Avenue
San Francisco, CA 94116
(415) 731-3513

Calif. residents add 6.5% Sales Tax. Shipping and handling charges $4.50 per package.

NEW:
HARDWARE BASED SECURITY SYSTEM

Protect company secrets, financial data, DOS, etc. from dishonest employees or other thieves by installing a TOTALOCK security card in your PC, XT, AT or compatible TOTALOCK locks DOS plus all your software, data, and hardware including modems, printers and LAN's. Unless the correct password is entered, the entire system will lockup. Requires PC or MS DOS 2.0 and up, and a short or long expansion slot. Single password Model 700-1 at $100.00 or 4 password Model 700-4 at $120.00.

1-800-722-8883
in Conn. (203) 355-2659

TOTALOCK
NETRONICS R&D LTD.
NEW MILFORD, CT.

2.25 Per Disk

Public Domain SOFTWARE
Currently Available
PC-SIG 1-450
PC-BLUE 1-187
$5.00 For 3 Disk Catalog

Harnessed Computer Corp.
P.O. Box 63-5095
Margate, FL 33063

World's Finest Software

Personal Financial Planner

For the IBM PC or compatible
Includes:
- Budget planner
- Mortgage planner
- Loan planner
- Investment planner

Easy to use spreadsheet—style operation

SEND CHECK/MONEY ORDER FOR **$29.95**
World's Finest Software
PO Box 24006
Dayton, OH 45424—0006
(513) 278—6242

S&H INCLUDED / OHIO RESIDENTS ADD 6.5% SALES TAX

STOP PAYING LAWYERS. USE LEGALEASE SOFTWARE

Boston attorney Richard Gens gives you over 150 time-tested contracts, agreements, leases, notices, waivers — all at your PC keyboard. Just follow the easy on-screen menus. Free PC-Write word processor. For IBM® PC's. $129.95 plus $7.50 S&H.

For orders call:
800-628-2828 Ext. 706
HDG SOFTWARE INC.
617-651-1881
Write: 54 Whitney Street
Sherborn, MA 01770

FREE 52 PAGE CATALOG AND APPLICATIONS GUIDE

AFFORDABLE ENGINEERING SOFTWARE
CP/M MSDOS TRSDOS PCDOS

FDP — Plotter Driver Program For multi and single pen plotters	$72.95	**ACNAP —** AC Network Analysis	$72.95
XFER — Transfer Function Synthesis Transfer functions Electronic circuits	$72.95	**DCNAP —** DC Network Analysis	$72.95
		SPP — Signal Process. Program	$72.95
TEKCALC — Scientific Calculator Program Screen graphics/ Statistics/ Programmable	$72.95	**PLOTPRO —** Scientific Graph Printing	$72.95
		PCPLOT — High Resolution Graphics	$72.95
COMCALC — Communications Design Spreadsheet Communications budget calculator	$72.95	**LOCIPRO —** Root Locus Analysis	$72.95
		ACTFIL — Active Filter Design	$72.95
RIGHTWRITER — Report Proofreader Program Version 2 — Applies 2,200 rules of English	$97.95	**STAP —** Static Thermal Analysis	$72.95
		MATRIC MAGIC — Matrix Manipulation	$72.95

BV Engineering
Professional Software
(714) 781-0252
2200 Business Way, Suite 207, Riverside, CA 92501 U.S.A.

VISA

IBM SOFTWARE $10/DISK

2,000 TOP TITLES!
in Wordprocessing, Spreadsheet, Database, Integrated, etc.

INSTANT ACCESS!

CALL TOLL FREE
1-800-663-8844
(604) 732-7508 in Canada)

to place your order. Super fast 2-day air courier delivery anywhere in North America. "If it's for the IBM, we've got it!" Call for FREE giant catalog.

SOFTSAVE

STOCKS + IBM-PC

"Buy cheap and sell dear." Track the price/volume movement of your stocks and make intelligent market decisions based on performance. Optimal keypad design for rapid data entry, no modem necessary. A complete data system, with superb graphic presentation of price movement and single point charts. Complete documentation in a neat package. For IBM-PC/Compatibles, and Z-100 computers with dual floppy or hard drive systems. Only **$49.95.** Use VISA or Master Card.

DISCOUNT DISCS
Computer Accessories
1270 N. Eglin Pkwy.
Shalimar, FL 32579
(904) 651-4550

ACCOUNTING MADE EASY
DIRECT! NO MIDDLEMAN
$349.00

8 Integrated Modules
Menu Drive & Help Screens

GL, AP, AR, Payroll, Sales, Invoicing, Inventory, RMA, Multi Check Reconcil.

COMPARES TO $2000.00 PROGRAMS! NOT AVAILABLE ANYWHERE ELSE!

TO ORDER CALL
TCE (818)967-0661

STOP PRINTER SETUP HEADACHES

with . . . .
MOMS Printer Primer
Use a menu to quickly set many printer features like:

- bold or wide
- draft or NLQ
- pica or elite
- compressed
- tabs/margins
- line spacing
- and more . . .
- plus . . . →typewriter mode →printer test
- works with: →any Epson →NEC PR103A →MS or PC-DOS

Why bother writing this program when you can buy it from MOM for just $19.95?

MOMS Software
32 Blanche Avenue
New Windsor, NY 12550
914 565-2412
Please add $2 s/h per order.

TAIWAN COMPUTER TRADE CENTER

Tel. No. (213) 222-9680, (213) 224-8610 — 800-342-2332
NEW YORK OFFICE 212-505-1970
FACTORY PRICES TO DISTRIBUTORS, DEALERS

PRICES ARE FOR QUANTITY OF 50

MONITORS (W/O BIOS & MEMORY)

Regular Motherboard 640K $87
Turbo 4.77/8MHZ $96
Turbo, 4 Layers 8MHZ $125
Turbo Motherboard 10MHZ $135
AT Motherboard 6/8MHZ $498

CASES

XT Flip Top & Slide $27
Mini AT for XT $50
AT $72

INTERFACE CARDS

Monochrome Adaptor $41
Mono Graphic Printer $60
CT 6040 Herc. Comptbl $86
Color Graphic Display $44
Color Graphic Printer $55
EGA Card $282

EXPANSION CARDS

Disk Controller 1 Port $25
Disk Controller 2 Ports $27
RS 232 1 Port $21
RS 232 2 Ports $29
Parallel Card $14
Multi 1/0 ..... $71
1/0 Plus Card $65
384 K MTF "0" Mem $74
640K RAM Card "0" K Clock Card $18
Game Card $15
AT 1/0 Card $55
AT 2 MB MTF Card $127

FLOPPY DISK DRIVE

Teac Lookalike $75
Teac 360 ..... $86
Teac 1.2 MB $110
Chinon 360 ..... $81
Chinon 1.2 MB $102
Fujitsu $79

HARD DRIVES & CONTROLLERS

20 MB Seagate ST 225 (68ms) $310
30 MB Seagate 4038 (40MS) $639
20 MB Seagate ST 238 with Adaptec Controller $480
Western Digital Controller $101
DTC AT Controller $205
AT Floppy & Hard Disk Controller $235

POWER SUPPLIES

135 W $50
150 W $51
150 W (L) $61
200 W $90

KEYBOARDS

K75 (5150) $40
BTC 5151 ..... $55
5060 XT/AT $55
5160 XT/AT $57
K8 ..... $50
K9 ..... $55
5152 AT $68

MONITORS

Samsung Amber $75
Samsung Green $69
Beltron amber $80
Beltron w/ Tilt & Swivel $90
Mitsubishi RGB $230
Tatung RGB-Green/Amber $299
EGA Mitsubishi $439

OTHERS

Speaker $1
Disk Storage (50) $5
Disk Storage (100) $7
Keyboard Drawer $30
Mini Center Surge Protector $40
Printer Stand $8
Joystick $15
Modem Internal $121
Logi Mouse $77
Power Strip (6 outlets) $5
Power Strip w/ Surge Protector $6
Power Pad Surge Protector $14
Printers ..... Call

COMPUTER SHOPPER™ *Shoppers Mart*

Showcase page is a new service to advertisers whereby high quality products can be displayed in the most economical fashion and at the highest visibility. Please contact these and other advertisers telling them where in *Computer Shopper* you saw their advertising. Advertising inquiries about this showcase page addition, which will appear monthly, should call: 305/269-3211.

BARE CARDS

Over forty different **APPLE™** & **IBM™** - compatible bare cards in stock. Complete with **NuScope** assembly guides. Ask for latest free catalogue.

NEW FOR IBM

E-1	640K MthBd c/w prom doc schem	$45
2-9	Disk Controller c/w schem	12
6-1	EPROM Burner/Serial, 2-card set for 2716-128 c/w doc schem stwr	30
6-6	Clock/Calender c/w doc & stwr	15
6-9	Two Serial Ports/Clock c/w prom & stwr	25

NEW FOR APPLE

E-1	6502B/65C02 Motherboard	$50
2-8	128K Add-On for the Applicard	15
2-10	ZIP-Loader like the QUICK one	17
3-6	80 Column/64K for the IIe	10
4-6	Speedy like the Accelerator	17
8-11	MIDI for Musical Instruments	15
9-6	Super Burner for 2708-16-32-64-128-256 & 27512. Use for 2-10	17

MICRO-MATE ASSOCIATES
P.O. Box 790 • Lewiston N.Y. 14092

APPLE® II CLONE
Personal Computer System
APPLE HARD DISK

Video Tech Laser 128 — $395.00
Quick-20 Hard Disk — $795.00

PORTABLE COMPUTER with 65C02 Processor, 1 Drive, 128k, 40/80 Column, Serial, Parallel, Modem, RGB and Mouse Ports. Also Key Pad, Function Keys, Slot 5 & 7. Compatible with most IIc/IIe Software.

HARD DISKS — Auto Boot Menu Selector Installed Free. Very Reliable. ProDOS/DOS 3.3 Compatible.

20mb Complete System with Cards	@ $ 795.00
40mb Twin 20mb Drives Complete	@ $1295.00
10mb Removable Hard Disk System	@ $1095.00

Money Back if performance not satisfactory.

CMC Computer Systems — Phone: 714/835-2462
1514 East Edinger #H — Santa Ana, CA 92705

DESKTOP PUBLISHING
σ μ Σ π Ω
SCIENTIFIC WORD PROCESSING

What*EVER* your task is, accomplish it with a Lexisoft Spellbinder Word Processor. Call or Write for information. Sold & *supported* by ***DAMAN***, 604 Springwood Cir., Huntsville AL 35803 (205) 881-1697

This ad created & printed using Desktop Publisher

Free
Computer Products CATALOG
Save $$$

Bargain buys in brand name merchandise. Lowest prices anywhere...many at liquidation. Huge catalog updated monthly.

Send $1.00 for postage & handling to:

JC ASSOCIATES
P.O. Box 1178
Los Altos, CA 94022

PC-ARENA™ Chess/Reversi

Turn your telephone into your personal gaming arena! You can play PC-ARENA Chess & Reversi between 2 PC's equipped with modems. PC-ARENA software is finely tuned but very affordable. Send just $19.95 (IN residents add 5% sales tax) to:

Mike & Jim Co.
P.O. Box 5513
Fort Wayne, IN 46895

COMPUTER HOBBYIST CATALOG

HACKER'S HANDBOOK

Best selling book on hacking passwords, protocols, access codes, operating systems, etc. Features phone, programming and hardware tricks. Explains "Salami", "Trap Door", and "Trojan Horse" techniques. Also networking, packet switching, and shortwave. All in U.S. and international standards. 169 pages...just $12.95.

Gorilla Descender ROM
Gives full descenders to Gorilla Banana printer. Replaces socketed 4AEO, 3ALI, or 3LE font ROM. Specify when ordering...$19.95.

CompuServe Kits **$18.95**
Surge Suppressors **$5.95**

To Order: Send check or money order (MN res. add 6% tax) in U.S. funds VISA/MC include card number and exp. date. Phone orders accepted 24 hrs./day.
Ph. 612/762-8847, 783-6393
Call or Write for a Free Catalog!

E. Arthur Brown Company
3404-CS Pawnee Drive, Alexandria, MN 56308

PCjr LOVERS

CONTINUE YOUR LOVE AFFAIR WITH THE JUNIOR, SUBSCRIBE TO

The Junior Report®

THE NATIONAL NEWSLETTER FOR IBM PCjr OWNERS

- SOFTWARE AND HARDWARE REVIEWS SPECIFICALLY FOR THE PCjr
- NEW JUNIOR TECHNOLOGY
- PCjr CLUB NEWS AND ARTICLES FROM ACROSS THE COUNTRY
- PUBLIC DOMAIN SOFTWARE
- DISCOUNTS ON PCjr ACCESSORIES AND SOFTWARE
- A MONTHLY NEWSLETTER DEDICATED TO THE SURVIVAL OF THE PCjr FOR ONLY $18/yr FOR U.S., $24/yr FOR CANADA (U.S. FUNDS)

THE PCjr CLUB
P.O. BOX 95067
SCHAUMBURG, IL 60195

DON'T LEAVE YOUR JUNIOR WITHOUT IT

Offshore Manufacturing
CUT COSTS UP TO 50%

DO YOU MANUFACTURE:
- PC add-on cards or other PCB's
- Electronic products in general
- Product enclosures, housings, or cases
- Mechanical devices
- Precision machine parts

IBM, AT&T, Microsoft, Chrysler, and other major companies use components produced in Asia to reduce costs. **Sunhill-NIC can help you achieve similar savings.**

WE CAN:
- Find reliable quality-conscious manufacturers for your products.
- Help you set up offshore facilities of your own.
- Inspect products, guarantee quality, and arrange shipment.

Please call or write:

SUNHILL-NIC
1000 ANDOVER PARK EAST
SEATTLE • WA • 98188
206/622-5775

COMPUTER REPAIR

Component level repair of 5¼" and 8" floppy disk drives, main boards, option cards, monitors, and power supplies in PC/XT compatible systems and Commodore products.

PC/XT disk drives	$30.00
1541/1571	$35.00
C-64	$40.00

Call for other prices or a free brochure sent ppd.

3 day turnaround
60 day warranty
Terms COD

North American Data Sys. Inc.
882 N. State St.
Lockport, IL 60441

(815) 838-6390

SYSTEMS & TERMINALS

Component Level Service

EX: NEC 8001 Series, WYSE PC & Terminals, Visual, Televideo, & most major brands.

Open Account for Qualified Firms

Digital Enterprises Inc.
11331 E. 23rd ST
Independence MO. 64052
816-254-9152

commodore service center
785-2490

C-64	$43.95
*1541 (align only)	$25.95
1571 (align only)	$25.95
*1541 (repair)	$45.95
*1571 (repair)	$45.95
SX-64	$60.95
C-128	$65.95
CBM Printers	Call

*not including head or stepper spindle motor
*parts included up to $15.00

WE ALSO SERVICE
IBM, Compaq, Epson, Nec & Zenith

We sell Commodore Parts IC, Boards, Etc.

AVT Advanced Video Technology Inc.
1310 S. Dixie Hwy., Ste. 18W
Pompano Bch., FL 33060

300 BAUD Line Powered MODEMS with Auto Answer

NEW Universal Data Systems Modems Model 103JLP

$99.95 each
plus $4.00 shipping & handling
Wisconsin residents add 5% sales tax

Paragon Electric Co.
P.O. Box 28 Dept 52
Two Rivers, WI 54241

$$ SAVE $$

GRAPHICS SOFTWARE

Energraphics (new 2.0)	$399
PC Paintbrush + Logimouse C7	$149

HARDWARE

Plus Hardcard 10	$569
Plus Hardcard 20	$699
SixPakPlus (64K)	$199
SixPakPremium (512K)	$449
Quadram EGA+	$439
NEC Multisync	$599

+ $3 handling — MC/VISA
MA residents must include 5% sales tax

GRAPHIC COMPUTER SOLUTIONS
52 Great Road
Sudbury, MA 01776
(617) 443-3844

COMPUTER SHOPPER™

SHIRTS
ALL SIZES
$5.00
+ SHIPPING

COMPUTER SHOPPER
P.O. BOX F
TITUSVILLE, FL 32781
1-805-269-3211

QL COMPUTERS
$249*
*** Special thru Oct. '86**

Sinclair QL Computer at regular low price of $299 including free merchandise certificate for $50 toward purchase of any Sinclair related hardware or software items from our large inventory-Sinclair Dealer since 1982.

Free shipping in extended South East. Phone Visa/MC orders welcome without surcharge.

(Authorized QL Dealer)
PYRAMID ELECTRONICS
Dr. Donald L. Dean, Owner
2174 Gulf Gate Dr.
Sarasota, FL 33581
(813) 922-9574

OTTO ELECTRONICS

895 RT. 130
E. WINDSOR, NJ. 08520

DISK DRIVES

8″ Full Height

FDD 100-0 Single Sided	**$125.00**
FDD 200-8 Double Sided	**$185.00**

Half Height

Others Available Please Call For Price

Enclosures, Power Supplies, and Complete Systems Available for 8″ Drives. Please Call for Quote

8″ Disk Controller For IBM™ PC/XT and Compatibles	**$266.00**

5¼″ HALF HEIGHT

Teac 55 BV 40 TRK Double Sided	**$115.00**
Toshiba ND-04D 40 TRK Double Sided	**$119.00**
Tosiba ND-08DE-G 1.2 MB AT Type Drive	**$165.00**
WST Full Height 80 TRK Double Sided 713 K to 813 K	**$65.00**
80 TRK Driver and Formatter Software For IBM™ PC/XT and Compatibles	**$44.95**
Disk Controller Card for IBM PC/XT and Compatibles. Control 360K or 1.2 MB Floppies. Also 3½″ Floppies with special software	**$189.00**

HARD DISK AND TAPE BACK UP

20 MEG Internal System ST225, DTC Controller, and Cables	**$445.00**
20 MEG External System - Case, Power Supply, Controller and Cables	**$595.00**
10 MEG Tape Back Up-Irwin 110 Internal Kit-Uses Floppy Interface	**$395.00**

IBM® PC COMPATIBLE SINGLE BOARD COMPUTER

5.75″ x 8.5″ (MOUNTS ON 5¼″ DRIVE)

- 8088 MICROPROCESSOR
- 4.77 MHZ CLOCK FREQ
- 8 LEVELS OF INTERRRUPT
- 512K RAM MEMORY
- 3 DMA CHANNELS
- 3-16 BIT COUNTER/TIMERS
- 2-RS 232C SERIAL PORTS
- +5V @2A, +12V @proof 100 MA
- FLOPPY DISK INTERFACE
- VIDEO DISPLAY INTERFACE
  - 80x25 OR 40x25
  - 640x200 OR 320x200
  - RGB OR COMPOSITE OUTPUT
- STD. IBM® KEYBOARD INPUT
- 8 BIT PARALLEL PORT

$495.00

IBM, IBM PC AND IBMXT ARE REGISTERED TRADEMARKS OF IBM CORP.

XT COMPATIBLES

XT TURBO MOTHERBOARD (0 K) Up to 640 K on Board	XT-TMB	$	**149.00**
Flip Top XT Case	FTCASE	$	**45.00**
Power Supply, Side Switch 150W	PS 150	$	**90.00**
Keyboard 5151 Style	KYB51	$	**85.00**
Mono Graphics W/Par Port	MGPP	$	**99.00**
Color Graphics W/Par Port	CGPP	$	**99.00**
Disk + I/O - Runs (2) 5¼″ Drives Par, Ser, Game Ports & CLK/CAL	FDCI/O	$	**99.00**
Standard 4 Drive Controller	FDC	$	**45.00**
Multi-Function Card - 0 K to 512 K W/Par, Ser, Game Ports, & CLK/CAL	MFIO	$	**99.00**

SPECIAL!

NEC V20-8 (D70108D-8) 8 MHz		**$15.00**
256 K - 150 NSEC DRAM	3.25 ea.	**9/29.00**
64 K - 150 NSEC DRAM	1.50 ea.	**9/13.00**

WE CARRY A COMPLETE LINE OF IC's, MEMORY, MICROPROCESSORS, CONNECTORS, CUSTOM CABLES, AND OTHER ELECTRONIC PARTS. ALSO PRINTERS, MONITORS, MODEMS, AND OTHER PERIPHERALS.
CALL AND LET US QUOTE YOU A PRICE.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE. QUANTITIES LIMITED TO AVAILABILITY

PAPER

9½″ x 11″ 20 lb. Blank Clean Perf 2700 SHTS/CTN #6910LE(20)	**$31.95**
14 7/8″ x 11″ 20 lb. 2400 SHTS/CTN Blank - #6410B, Green Bar #6410G	**$40.95**

WANT TO BE ON OUR MAILING LIST? MAIL IN THIS COUPON TODAY!

NAME _____
ADDRESS _____
_____
CITY _____ ST. _____ ZIP _____
RECEIVE INFORMATION ON UNADVERTISED SPECIALS!

9-5
Mon. to Fri.

609·448·9165

MC COD
VISA

COMPUTER SHOPPER™ Shoppers Mart

Showcase page is a new service to advertisers whereby high quality products can be displayed in the most economical fashion and at the highest visibility. Please contact these and other advertisers telling them where in *Computer Shopper* you saw their advertising.

Advertising inquiries about this showcase page addition, which will appear monthly, should call: 305/269-3211.

Cables

Custom Cables

- OEM Specialists!
- Product Support !
- Quick Turnaround!
- 1000's of Cables and accessories in stock!
- Lowest Prices !!!

Dealers Call!
(918) 438-6195

DATALINK
Tulsa, Oklahoma

HARD DISKS

8 Mb	$ 85
10 Mb	$160
20 Mb	$250
25 Mb	$300
33 Mb	$400

WD Controller $135

Call: (818) 703-6036

COMPCO
7821 Alabama Av. # 20
Canoga Park, CA 91304

FCC CLASS B PC/XT COMPATIBLES

640K MOTHERBOARD (W/256K) 150 WATT POWER SUPPLY, SLIDE CASE DISK CONTROLLER, 360K FLOPPY, PRINTER PORT, KEYBOARD $549

SECOND FLOPPY DRIVE	$89
COLOR/GRAPHICS CARD	$69
COMPOSITE MONITOR	$89
RGB COLOR MONITOR	$299
MONO/GRAPHICS CARD	$99
TTL MONITOR	$99
20MB SEAGATE, CONTROLLER	$409
30MB SEAGATE, CONTROLLER	$499
384K MEMORY	$49
300/1200 INTERNAL MODEM	$149
300/1200 EXTERNAL MODEM	$135
TECMAR QIC-60 BACKUP	$1349
QIC-02 HOST ADAPTERS	$139

TOO MANY PRINTERS TO LIST !!!

AT COMPATIBLE, 8MHZ, MONITOR, 1.2MB FLOPPY, SERIAL/PARALLEL PHOENIX BIOS, COMPLETE. $1545
WITH 39MS 30MB DRIVE $2199
HOW DO WE DO IT? LOOK AT THE SIZE OF THIS AD. LOW OVERHEAD

SYSTEMS DESIGN ASSOCIATES
2233 HOMECRAFT LANE
BEDFORD, TX 76021
(817)571-6300

SURPLUS BOARDS AND COMPUTERS

All Kinds Available
● VME ● S-100 ● Atari ●
● Multibus ● Versabus ● RCA Elf ●
...many others
AND PERIPHERALS

Also buying surplus parts and equipment
No purchase too small

REPAIRING
Most boards and drives
i.e.: IBM Compatible MB $30+parts

Write for free catalog
and/or repair estimate
OR CALL, 24-hour number:
(203) 634-4593
MEGATECH
PO Box 4213
Yalesville Station, CT 06492

RIBBONS

DIABLO HTII M/S	**$2.45**
EPSON FX/MX/RX 70/80	**2.70**
FX/MX/RX 100	**3.45**
NEC 8023	**2.95**
OKIDATA 80/82/92	**1.20**
182/192/193	**4.90**

OVER 350 STYLES IN STOCK!
- COLOR RIBBONS AVAILABLE
100% SATISFACTION GUARANTEED!
- DEALERS CALL FOR A PRICE LIST

1-800-621-9127
1-513-294-4946 (OHIO)
MON.-FRI. 9-5 • MC VISA

Great Lakes RIBBON COMPANY
P.O. Box 292512
KETTERING, OHIO 45429

TANDY COMPUTERS "SALE" PRICES

Buy Tandy computers and printers from a Radio Shack Authorized Dealer at low prices with a 100% manufacturers warranty, good anywhere in the United States. We offer credit card purchasing plus an additional discount for cash-with-order buyers. CALL TODAY for a price quote. We are serious about saving you money. References given upon request, to prove our bona-fides. We also offer the full line of OKIDATA printers at low prices.

R.L. ELECTRONICS
1-512-556-8229

MEMORY CHIPS

41256-15	$2.49
41256-12	CALL
41256-10	CALL
4164-15	$.79
4164-12	CALL
41128-15 (for AT)	$3.50
8087-3	CALL
8087-2	CALL
80287-3-6-8	CALL
2764-25	CALL
27128	CALL
27256	CALL
20 MB Seagate	$399.00

ESSKAY
(718) 699-1988
* Prices as of 08/14/86

68020 COMPUTERS

32 bit data bus, 0.5 to 14.5 Mbyte RAM, up to 258K ROM, 2 to 30 users, DMA floppy and SASI (SCSI) interfaces, calendar/clock w/battery backup, programmable triple timer, Unix™ like real time multi-tasking, multi-user OS-9™ Operating System, BASIC-09™, relocating macro assembler, linking loader, line editor, 2 screen editors, spelling checker, mail merge, spreadsheet, and utilities. Fits IBM PC™ compatible cabinet. Optional floating point coprocessor, memory protection module, graphics, "C" Programming Language, Pascal, Fortran, Sculptor, communications package, networking. More. From .. $2195.00
Other 68XXX computer systems from 995.00

AAA Chicago Computer Center
120 Chestnut Lane, Wheeling, IL 60090
(312) 459-0450

IBM and PC are trademarks of International Business Machines. BASIC09 and OS9 are trademarks of Microware Systems Corp. and Motorola Inc.
Unix is a trademark of Bell Telephone Laboratories.

PC-KEY-DRAW

Version 3.1

Powerful & versatile keyboard to screen graphics editor, CAD, paint, slide show, and poster printer for the IBM PC family and compatibles with at least 256K and CGA or EGA.

- $15 trial price for complete program, manual on disk, and ref. card.
- $100 registration price for above plus printed manual, updates, support and registration.

Send check or money order
OEDWARE
P.O. Box 595
Columbia, MD
21045-0595
(301)997-9333

PC-KEY-DRAW set this ad

GET THE REAL THING AT THE RIGHT PRICE!

Why buy a clone when you can get the real thing?

RECONDITIONED IBM'S

IBM PC 256K, two 360K floppies, DOS, keyboard only $995
IBM PC/XT 256K, one 360K floppy, DOS 10 Meg hard disk, keyboard only $1595

All Equipment
Comes With 90 Day Warranty.

DRAMEN ELECTRONICS
608 Creekside Drive
Raleigh, NC 27609
919-828-2371

* IBM is registered trademark of IBM

MEGAMEMORY In Your IBM PC/XT/AT or COMPATIBLE

Lowest Prices in USA
Fully Populated 2MB Boards
Made by Tall Tree Systems
HIGHEST QUALITY RAM CHIPS

JRAM-2	$299
JRAM-3 LOTUS—INTEL	$369
JRAM-AT	$369
JRAM-AT-3 LOTUS—INTEL	$419
JLASER-1	$269

THE RAM EXPLOSION
(703) 569-4471
VISA/MASTERCARD
Dealer Inquires Invited

---

30 Mb KIT $455

Seagate ST238 +Adaptec

20Mb Kit	**$385**
1200 baud ½ card	**$115**
Multi I/O	**$ 65**
A/B Switchbox	**$ 35**

1389 Alexandria Dr. #1
Lexington, KY 40504

DATALEX
800-826-7397-wait
for tone-0002-*
(606) 255-2523

STOP

Your Ad Displayed Here
For Only
$155.00
CALL: 305-269-3211
FOR DETAILS

DISK DRIVE SERVICE

5¼"	$35
8"	$45

*** SERVICE SPECIAL ***

Apple II Drives	$30
Shugart SA800/801	$25
Shugart SA850/851	$35

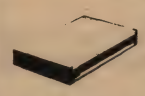
60 day warranty. Quick turnaround and trade-in available for drives too costly to repair. Prices do not incl. parts or shipping. If parts more than $20 we get permission before repairing. Units returned UPS COD unless otherwise requested.

LDL ELECTRONICS
13392 158 ST. N.
Jupiter, FL 33458
(305)747-7384
See classified section
172 drives for sale.

Premium Quality by DATATRONICS

MODEMS

300/1200/2400 BAUD



- Fully Hayes® compatible
- FCC approved
- Solid extruded aluminum housing
- 30 day money back guarantee
- 2 year limited warranty

1200B Internal: Regular $479 **SALE $239**
1200 External: Regular $499 **SALE $249**
2400 External: Regular $699 **SALE $499**

Call for pricing on add-on cards, cables, monitors, and more.

10% discount for orders of 3 sets or more.
No VISA/MC surcharge. Free shipping/handling.

Dealer inquiries invited.

Sunhill-NIC, Inc.
Times Square Building #205
414 Olive Way
Seattle, WA 98101
206/622-5775

Hayes is a registered trademark of Hayes Microcomputer Products, Inc.

QUALITY AT A DISCOUNT

SOFTWARE

APPLE

HANDLERS PACKAGE	$116.98
MAGIC OFFICE	$212.95
MAGICALC	$ 99.00
MAGIC WINDOW II	$105.95
DOUBLE TAKE	$ 23.07
APPLE MECHANIC	$ 19.95
PRONTO DOS	$ 19.95
BEAGLE BASIC	$ 23.07
SILICON SALAD	$ 16.95
TURBO TUTOR	$ 23.07
TURBO PASCAL (Z80)	$ 36.27
TURBO TOOL BOX	$ 36.27
BANK ST FILER	$ 45.95
BANK ST MAILER	$ 45.95
BANK ST SPELLER	$ 45.95
BANK ST WRITER	$ 45.95
DAZZLE DRAW	$ 42.95
PRINT SHOP	$ 32.97
SIDE WAYS	$ 39.60
THINK TANK	$ 99.00
COPY II PLUS	$ 29.95
MULTIPLAN	$ 79.95
APPLE SOFT COMPLIER	$119.95
WORD STAR	$231.95
WORDSTAR/MAIL	$324.95
MULTIPLAN (Z80)	$134.95
TYPING TUTOR II	$ 27.95
DOLLARS & SENSE//e	$ 79.95
DOLLARS & SENSE//c	$ 84.95
SENSIBLE SPELLER	$ 86.95
ASCII EXPRESS	$ 99.94
PINPOINT	$ 59.95

MACINTOSH

HOME ACCOUNTANT	$ 68.95
SMARTCOM II	$119.95
HIPPO-C LEVEL 1	$103.00
HIPPO LEVEL II	$275.96
THINK TANK 128K	$ 99.99
THINK TANK 512K	$169.95
JAZZ	$399.99
MICROSOFT CHART	$ 89.00
MICROSOFT FILE	$125.95
MULTIPLAN	$125.95
MICROSOFT BASIC	$100.95
TYPING TUTOR II	$ 34.95
DOLLARS & SENSE	$129.95
COPY 11 PLUS	$ 24.95
EXCELL	$239.95
SIDEKICK	$ 54.95

IBM

SUPERCALC 11	$229.95
D-BASE III+	$399.95
WORD PERFECT	$269.95
SIDEKICK	$ 44.95
LIGHTNING	$ 64.95
MICROSOFT WINDOWS	$ 79.95
MULTIMATE	$319.95
FRAMEWORK	$339.95
DR DRAW	$159.95
SAMNA WORD	$339.95
COPY 11 PLUS	$ 24.95
ASCII EXPRESS	$ 89.95
DAC EASY	$ 67.95
DAC PAYROLL	$ 47.95

MODEMS

PROMETHEUS PROMODEM 1200	$294.95
PROMETHEUS 1200B W/SOFTWARE	$289.95
MAC PAC 1200 BAUD MODEM/CABLE/SOFTWARE	$328.95
HAYES 1200B	$449.95
MICROMODEM //e	$162.95
SMARTMODEM 1200	$489.95
VOLKSMODEM 1200	$199.95
NOVATION 212 APPLECAT	$494.95
NOVATION ACCESS 123 (IBM)	$484.95

We Have Ribbons! Cables!
Recreational and Educational Software
Too Numerous For Listing.
CALL FOR PRICING!

PO's welcome from qualified institutions.

Terms: All orders shipped UPS ground Air extra. Calif. residents add 6 ½% sales tax. Allow 12 days to clear personal check. Prices subject to change without notice. All goods are new, include warranty and are guaranteed to work. Due to low prices and our assurance that you will get new, unused products — **all sales are final**. We do not guarantee compatibility. Call before returning goods for repair or replacement. **All returns subject to 15% restocking fee.**

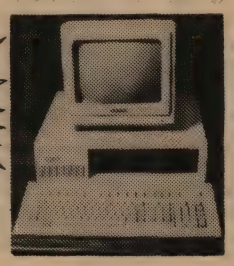
COMPUTERS

CPC 2010 XT Advanced System

- 8088 CPU w/8087 Optional 640k RAM
- 2 360k Disk Drives w/Controller
- Hi-Res Mono Graphics Card with Parallel Port
- 135 Watt Power Supply (Ready for Hard Drive)
- Deluxe 5151 Keyboard
- Multifunction Card W/SER/PAR/Game Ports/Clock/RAM
- Hi-Res Amber Monitor
- DOS 3.1

$995.95

FREE 10-DS/DD DISKETTES WITH EACH SYSTEM



Limited 1 Year Warranty

Hard 20 Plus

20 Meg External Drive for Macintosh Plus*

- Fits Under Your Mac
- Built-in Surge Protector
- 4 Mili Seconds Disk Access Time

120 Day Warranty **$779.95**

*Macintosh Plus is a registered trademark of Apple Computer Company.

Cantech 80 col / 64k

For Your //e
Appleworks Compatible!
1 Year Warranty!
$39.95

HARDWARE

APPLE

ALS CP/M CARD W64K	$253.00
ADD RAM (16K)	$ 59.95
PRINTER MATE	$ 49.95
DISPATCHER	$ 89.95
Z-ENGINE	$119.95
SMARTERM II	$119.00
VIDEO TERM	$215.00
ULTRA TERM	$289.00
SATERN 128K	$329.95
80 COL/64K	$ 39.95
GRAPPLER PLUS	$119.00
TAXAN RGB INTERFACE	$ 99.00
APRICORN SERIAL CARD	$ 88.00
RAMWORKS II W/64K	$151.95
80COL W 64K & RGB	$179.95
V-COLOR 7 RGB	$112.00
PRINT IT	$ 99.95
FLOPPY CONTROLLER	$ 59.95
PRINTER INTERFACE/CABLE	$ 44.95
ADD RAM	$ 59.95
PRINT-IT	$144.95
FLOPPY CONTROLLER	$ 59.95
SERIAL CARD	$ 69.95
SUPER SERIAL CARD	$ 99.95
POWER SUPPLY	$ 59.95

IBM

HEXACE COLOR GRAPHIC CARD	$149.95
MULTIFUNCTION	$119.95
AST ADVANTAGE	$499.95
MEGA PAK 128K	$249.95
DISK CONTROLLER	$ 59.95
HERCULES COLOR CARD	$189.95
HERCULES GRAPHICS	$389.22
MONOCHROME HI RES GRAPHICS	$124.95
135 WATT POWER SUPPLY	$ 99.95
OK 384K MEMORY EXPANSION CARD	$ 69.95
FAST 88	$149.95

ACCESSORIES

MACH II JOY STICK	$ 34.95
MACH III JOYSTICK FIRE BUTTON	$ 39.95
SAVER FAN (SURGEPROTECTED)	$ 35.95
MOUSE MOVER (MAC)	$ 24.95
5¼ DISK DRIVE CLEANER	$ 17.95
RF MODULATOR (APL)	$ 17.95
SWIVEL MONITOR STAND 11"	$ 12.95
SWIVEL MONITOR STAND 14"	$ 17.95
5151 DELUXE KEYBOARD	$ 99.95
RAINBOW PAPER (300 SHEETS)	$ 11.95
MUPPET LEARNING KEYS. .APLC/APL//e	$ 49.95
A+ MOUSE MAC	$109.49
A+ MOUSE //c	$ 64.95
PC MOUSE IBM PC/AT	$157.95
AB SWITCH BOXES PAR AND SERIAL	$ 69.95
KEYBOARD DRAWER	$ 64.95
SURGE PROTECTORS 6 OUTLETS	$ 39.95
ANTI GLARE SCREENS	$ 37.95
MAC TOTE BAG	$ 79.95
SONY 3¼ DISKS BOX 10	$ 24.95
DS/DD QUALITY DISKETTES 10 FOR	$ 14.95

DISK DRIVES

DISTAR ½ HT APPLE //e, //c. 11+	$149.95
MACINTOSH EXTERNAL 800K	$389.95
360K IBM FLOPPY 51/4	$119.95
SEAGATE 20 MEG WITH CONTROLLER	$579.95

PRINTERS

STAR MICRONICS SUPPORTS FULL LINE GRAPHICS
TRACTION & FRICTION FEED INCLUDED

SD15 16K/160 CPS	$489.95
SG10 2K/120 CPS	$259.95
SG15 16K/120 CPS	$419.95
SR10 2K/200 CPS	$539.95
SR15 16K/200 CPS	$649.95

PANASONIC BOTH TRACTION & FRICTION FEED
TWO YEAR GUARANTEE

P1080	$249.95
P1090 10" 100 CPS	$239.95
P1091 10" 120 CPS	$299.95
P1092 10" 180 CPS	$439.95
P1093 15" 160 CPS	$619.95

BROTHER LETTER QUALITY

BROTHER HR-15	$349.95
BROTHER HR-25	$630.00
JUKI 6100 LQ 18 CPS	$399.95
JUKI 6300 LQ 40 CPS	$699.95
LEGEND 1385 120COL/120 CPS	$374.95
EPSON LX 80	$259.95
FX 85	$399.95
JX 80	$349.95
LX 90	$349.95

CALL TOLL FREE

800-423-4415 inside CA
800-523-2382 outside CA

TECHNOLOGICAL EXCELLENCE
CANTECH

700 MOWRY AVENUE
FREMONT, CA 94536
(415) 793-8674

COMPUTER SHOPPER™ Shoppers Mart

Showcase page is a new service to advertisers whereby high quality products can be displayed in the most economical fashion and at the highest visibility. Please contact these and other advertisers telling them where in *Computer Shopper* you saw their advertising. Advertising inquiries about this showcase page addition, which will appear monthly, should call: 305-269-3211.

68000/68010 CROSS ASSEMBLER

An inexpensive way to learn and use the 68000/68010 assembly language on your IBM PC or Compatible.

- Generates S-Record output files
- Comprehensive listing facilities, labels to 32 characters, sorted symbol table
- Strict syntax check with extensive ERROR reporting
- Supports INCLUDE files, PATH names, both RORG and ORG mode, many other directives (except MACROs)
- NOT Copy-protected

Minimum requirements: 256K, DOS 2.XX, 1-5¼" DSDD disk

Checks only. No charge cards.
MN residents +6% sales tax

$49.95

RAVEN COMPUTER SYSTEMS
Box 12116, St. Paul, MN 55112

640K RAM UPGRADE FOR IBM/XT, COMPAQ

Easy installation. Absolutely no soldering or technical experience needed. This upgrade requires no slots; replacement chips plug into existing IC sockets. There are no software changes; simply install and use. 30 day money-back guarantee. Specify IBM/XT or Compaq. Complete kit with illustrated instructions only $98, or $46 w/o RAM chips. Shipped UPS Blue ppd, foreign add $5.
VISA, M/C, Check, Money Order.

NUEVO ELECTRONICS CORP.
P. O. Box 209 111 South Second St.
Richmond, Texas 77469
713 341-6001

PCjr UPGRADE Headquarters

FAST MEMORY

FAST MEMORY add-in, no pwr supply needed
- 512K add-in (640K total) only $189
- 256K add-in (384K total) only $149

1X SPEED-UP

2-DISK CONTROLLER AND CABLE

2-DISK CONTROLLER AND CABLE add-in, connects to any standard floppy disk placed next to PCjr
- as option to any FAST MEMORY $49, alone $79

REAL-TIME CLOCK

REAL-TIME CLOCK add-in, CMOS w/ lithium bty
- as option to any FAST MEMORY $35, alone $59

2-DISK CONTRLR, CABLE and REAL-TIME CLOCK
- 2-disk contrlr and clock w/ lithium bty, $99

Please Add $2.50 for shipping, First Class US Mail

ES QUALITY PRODUCTS
5311 MANGO BLOSSOM, SAN JOSE, CA 95123
(408) 224-5574
Phone staffed 24-hours, 7-days

USED APPLE-IBM-CBM

Apple IIe	$500
Apple II$	$225 up
Lazer 128	Call
Apple Disk II	$130
C-64	$100
1541 Drive	$130

Trade your ???? in on a PC/XT Clone
We Buy, Sell & Horsetrade Most Popular Computers

318-865-6743 4-9pm CST

Shreve Systems
845 Lark Ave.
Shreveport, LA 71105
VISA/MC

IBM PC, ZENITH 150/160 & H89 Speed Doublers

PC and 150 **Speed Mods** runs at 4.77 or 6.67 MHz. Socketed crystal. Hardware reset FREE. **Assembled and Tested** $34.95

H-89 **Speed Mod** runs at 2 or 4 MHz. Software selectable. **Kit** $24.95, Assembled $34.95

H89 20 Meg Winchester only .. $795

Ask about our MS-DOS and CP/M software. All under $39.95!

Micronics Technology
449 Barbados Way
Niceville, FL 32578
904-897-4257

Checks, VISA, MC accepted.
Add $2 (Winchester $20) shipping

PRICE LEADER

TAPE BACKUPS

IRWIN 10MB	$349
IRWIN 20MB	$469
ARCHIVE 60MB	$649

HI SPEED DRIVES

RODIME 20MB AT KIT	$495
RODIME 30MB AT KIT	$595

HARD CARD

20MB BUSINESS CARD	$475

MODEMS

2400 US ROBOTICS	$374
1200 HALF CARD	$139
1200 EXTERNAL	$139

STORAGE DATA
The price leader in mass storage!
Visa Mastercard Amex C.O.D
To Order Call (213) 540-5513

ATARI® 520ST™

users expand memory to 1, 2.5 or 4 Mbyte ($169.00, $595.00 and $995.00) with easy to plug in internal modular kits.
No soldering required! Factory installation on request.
Also upgrade to hard disk (10 - 30 Mb), cables and connectors for video/disk available.
For details write to:

tech-specialities Co.
P.O.Box 73122
Houston, TX 77273
(713) 893-9107

TURBO MASTER

Turbo Master is an integrated development system for Turbo Pascal programmers consisting of six floppy disks and a manual. The components of this system include the following: Turbo Screen master, Turbo ISAM Master, Turbo Menu Master, Turbo Toolkit Master, and Resident ISAM Master. The Turbo Screen Master features Intelligent Cursor which allows you to draw boxes and borders by simply moving the cursor to the desired position, and Extended Variable Names which allows the use of arrays and structures in your variable names. The Turbo ISAM Master generates ready to run Turbo programs using Borland's Turbo Pascal Database Toolbox; It automatically interfaces to Turbo Screen Master. The Turbo Menu Master features a menu data base and an interactive menu builder allowing for the automatic entry and reorder of selections and users choice of procedure, chain, execute or comment code generation for each selection. The Turbo Toolkit Master includes procedures for full control over all screen attributes, advanced string functions, automatic control of multiple help screens, saving and retrieving screens to RAM buffers, Caps/Num/Scroll/Lock control procedures, and report procedures. The Resident ISAM Module Module uses less code space, provides a key buffer data area outside your program's data space. All of these programs are available as a package for:
Money Back Guarantee $99.95 plus 7.50 S&H
Hawaiian Village Computer Software
1109 Pennsylvania Ave., St. Cloud, FL 32769
Info: (305) 892-5686 (800) 821-9503

HAS YOUR COMPUTER CALLED?

615-562-3393

300/1200/2400 BAUD
24 hrs/Day With No Hourly Connect Charges
Computer and Gifts Wholesale
Business Opportunities Available

STE, Inc.
Computer-Biz-Line™

BOARD/CARD WHOLESALE & RETAIL CENTER!!

4-Layer AT Motherboard	$557.00
4-Layer XT Turbo Motherboard	$147.00
XT 640K Motherboard	$104.00
Multi I/O Card	$86.00
I/O Plus Card	$60.00
Mono/Graphics Card	$66.00
Color Graphics Card	$55.00
Disk Card	$34.00

All board/card assembled & tested with 90 days warranty. No RAM, No BIOS on motherboard. Call for the qty. price and free user manual for evaluation. Volume discount up to 25% in qty. of 50.

Socketed board/card W/O IC on sale! Call for the price!

AMT TECHNOLOGY
1020 Bay Area Blvd., Ste. 210
Houston, Texas 77058
(713) 480-9506

PERFORMANCE

813k, 811k, 731k disks for PC-DOS
Plus 808k/1 sector per cluster
Dependable hi-capacity storage
Fully transparent to DOS 2.0-3.2
Automatic quiet step rate
Install 80-track drive as A; or B;
403k boot disk, 360k free w/system
Optional spacebar menu w/help
Specify your own custom format
Single-drive 80-track copy utility
1.2meg 5" AT or 8" w/controller
Runs 3.3meg 192 tpi as B; or higher
Driver software, formatter, tutorial

44.95
VISA/MC OK

DATADISK
Box 15313
Santa Fe, NM
87506

Tech, dealers: **505-579-4496**

1200k/8"/5"/3"controller
Serial, Parallel, Clock — $189
TEAC 1.2 meg drive — $159
1.2 meg/std ctrlr — $279

NEED CAMERA REPAIRS ALSO?

Subscribe today to *Shutterbug*, the International Shopper for Anything Photographic. Hundreds of ads offering new and used cameras, repair services, bargain-priced film and much more.

Send check or money order for $11.97 to *Shutterbug*, Dept. CS685, P.O. Box 1209, Titusville, FL 32781; or call toll free 1-800-327-9926 and charge to VISA/MasterCard.

Align Disk Drives

For Yourself, For Others

5¼" ALIGN MASTER ALIGNMENT DEVICE
IBM, Apple, Series 100, Commodore and True Compatibles
no oscilloscope

EXTREME ACCURACY
VERY FAST • EASY TO USE
comprehensive manual

$129 Incl. Software
Performance Guaranteed!
Orders- Specify computer type.
Oavoio School of COMPUTER TECHNOLOGY
2150 B Rheem Dr.
Pleasanton, CA 94566
INFORMATION (415) 462-7723

C-64 CP/M

Don't give up on your Commodore 64 CP/M - Z80 cartridge system. All it needs is a CPMPAT package by COMPUWORKS! By using a Commodore-compatible modem, you will be able to download any accessible CP/M file or program you wish (diskette storage is limiting factor) at an incredible 300, 600 or 1200 baud using the FREE ready-to-run MODEM740 program included with your purchase! CPMPAT also enables you to run almost all CP/M 2.2 compatible word processing, data base, communications, spreadsheet, etc. programs supporting a 40 column screen size because cursor addressing, reverse video and RS232 capability are also features of this package! This system will also work well with the 1541 Flash! by Skyles Electric Works allowing faster disk drive operations.

All for only $ 14.95

Send check or money order to:
COMPUWORKS
P.O. Box 455
Moorhead, MN 56560

STOP

Your Ad Displayed Here

For Only

$155.00

CALL: 305-269-3211 FOR DETAILS

INTRODUCING THE PEACH-1000, PEACH-1000 TURBO and PEACH-2000 — THE MOST COMPATIBLE AND THE BEST PRICE!!!

MicroPeach now offers the IBM PC compatible component package— PEACH-1000 (XT-4.77MHz), PEACH-1000 TURBO (XT-4.77MHz/8MHz), PEACH-2000 (AT 6MHz/8MHz) at a SPECIAL PRICE FOR USERS GROUP & DEALERS (MINIMUM ORDER — 3 UNITS)

PEACH-1000 — $309
BASIC PACKAGE

INCLUDES:
- Intel 8088 CPU, 4.77MHz
- 640K Mother Board (0K)
- 135W Power supply
- IBM Style Keyboard
- Flip Top/Slide Out case

PEACH-1000 — $579
STARTER PACKAGE

INCLUDES:
- 256K Memory on Mother Board (expandable to 640K)
- Color Graphic Card
- Floppy Controller Card
- One Floppy Disk Drive
- 135W Power Supply
- IBM Style Keyboard
- Flip Top, Slide Out Case

OPERATING SYSTEM MANUAL & SOFTWARE
- MS DOS 2.11 & GW Basic $89
- IBM PC DOS 2.1 .....$79
- IBM PC DOS 3.1 .....$79

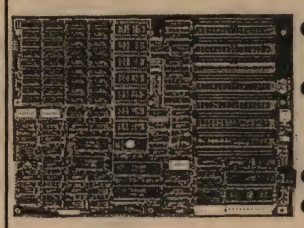
BOOKS AND MANUALS
- Framework II - an introduction.....$17
- Framework Developer's handbook $25
- Using DBASE III $19
- DBASE III Advanced Programming ...$24
- Guide to using Lotus 123.....$19
- Using Multimate 3.3 .....$19
- Using Symphony $24
- Wordstar 2000.....$19

PEACH-1000 TURBO — $409
BASIC TURBO PACKAGE

INCLUDES:
- Intel 8088, 4.77MHz/8MHz CPU
- 640K Mother Board (0K)
- 135W Power Supply
- Optional 8087 Math Coprocessor
- IBM Style Keyboard
- Flip Top/Slide Out Case

IBM COMPATIBLES

MOTHER BOARD (XT-0K) — $129



- IBM PC/XT Fully Compatible
- 8088 Micro Processor w/8087 Optional
- 8 I/O Slots
- Up to 640K Memory On Board

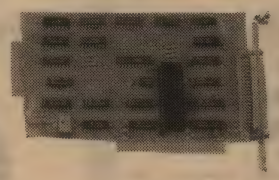
COLOR GRAPHIC CARD — $65

- RGB & Composite
- W/Light Pen & RF Modulator Ports
- 640 x 200 Resolution

FLOPPY DISK CONTROLLER — $42

- Handle 2 Internal Drives & 2 External Drives
- W/Cable

DISK I/O CARD — $99



- Handle 2 Floppy Drive
- 2 Serial (2nd optional)
- 1 Parallel
- Game Port
- Clock/Calendar
- W/Software, Manual & Cables

- Multi I/O Card (Ser/Par/Game/Clock-Calendar) $69
- Monochrome card w/printer $79
- 384K Multifunction card (expandable to 384K/Ser/Par/ Game/Clock-Calendar) $89
- Flip Top/Slide Out case.....$49
- 5150 Keyboard (same layout as IBM)$55
- 360KB Half-Height DS/DD Drive ...$85
- High Resolution Composite Monitor $75
- TTL Monochrome Monitor.....$89
- RGB Color Monitor (Mitsubishi) ..$350

PEACH-2000 — $CALL
BASIC PACKAGE

INCLUDES:
- Intel 80286 Microprocessor with optional 80287 Math Coprocessor socket
- 8MHz/6MHz CPU, 33% faster than the speed of IBM AT
- 640K on Mother Board (upgradable to 1M.B)
- 200 Watts Power Supply
- IBM AT Style Keyboard and Case

PEACH-2000 ENHANCEMENT (Optional):
- Combined floppy & hard disk controller $329
- One 1.2MB floppy disk drive $165
- Seagate 20MB hard disk drive ..$399
- Serial/Parallel Card $99
- 2.5MB Memory expansion card (0K)$199

MicroPEACH COMPUTERS

4768 Lincoln Ave., Cypress, CA 90630

Order & Inquiry Line:

(714) 995-3600

DEALERS AND SALES REPRESENTATIVES WANTED!!

COMPUTER SHOPPER™ Shoppers Mart

Showcase page is a new service to advertisers whereby high quality products can be displayed in the most economical fashion and at the highest visibility. Please contact these and other advertisers telling them where in *Computer Shopper* you saw their advertising. Advertising inquiries about this showcase page addition, which will appear monthly, should call: 305-269-3211.

TURBO - Q ACCELERATOR

- Increase IBM-PC/XT*, compatibles, or clones by 260%**
- No expansion slot required.
- Real time applications remain **REAL TIME (i.e. SYSTEM CLOCK!)**
- Disk **FORMAT** and **DISKCOPY** works in **FAST** or **NORMAL** mode.
- Total SOFTWARE and HARDWARE **compatible.**
- Documentation included.
- **Made in U.S.A.**
- Turbo-Q/6X*** (6.7MHz).....$39.95
- Turbo-Q/6 (6.7MHz).....$59.95
- Turbo-Q/8 (8.0MHz).....$124.95
- Group/volume discounts available. Dealer inquiries welcomed.

Visa/MC orders call 1-800-628-2828, X612 or mail check/money order & inquiries to:
QUEUE LABORATORY, INC.
P.O. Box 5855, Marlboro, MA 01752.
Please add $3.00 for shipping and handling.
Massachusetts residents add 5% sales tax.

*IBM-PC/XT are trademarks of IBM Corporation.
**Benchmark evaluated by Norton SYSINFO Utility (8MHz.)
***Some assembly required.

IBM PCjr SPECIALS

PRO KIT - 512K "ADDITIONAL MEMORY", PARALLEL PORT & TIME/DATE CLOCK $ 365

2nd DISK DRIVE -- COMPLETE SYSTEM - $ 239
external drive, control card uses modem slot

2nd DISK DRIVE -- DO IT YOURSELF SYSTEM - $ 95
you supply the external drive

ADAPTER CABLE FOR COLOR MONITOR	$ 15
ADAPTER CABLE FOR SERIAL DEVICES	$ 15
IBM CARTRIDGE BASIC	$ 30
IBM POWER ATTACHMENT	$ 65
IBM PARALLEL PORT	$ 79
KEYBOARD CABLE/FULL SIZE KBD.ADAPTER	$ 35
AUDIO AMPLIFIER fits in computer	$ 25
RACORE DRIVE II with DMA	$ 325
RACORE 512K MEMORY	$ 125
QUADRUM DRIVE II EXPANSION CHASIS	$ 300
(limited quantity)	
WORKSTAR FOR PC-jr	$ 45
shipping not included	

OTHER PC-jr PRODUCTS AVAILABLE

CALL OR WRITE FOR CATALOG

COMPUTER RESET

USED COMPUTER SHOP with new accessories

P.O. BOX 461782
GARLAND, TEXAS 75046
CALL Voice (214) 276 - 8072

OPEN BBS to Buy, Sell & Trade
(214) 272 - 7920
300bd, 8 bits, 1sb, no parity
no password or membership

RIBBONS & MORE

New—No Reloads—U.S. Made

Brother HR-15,25,35	$5.75
Canon PW1080,1156	$6.00
Diablo Hytype II M/S	$2.95
Epson LQ800	$5.75
Epson LQ1000 Zip	$5.00
NEC Spinwriter	$4.20
NEC Pinwriter P5	$9.25
Okidata ML182/192	$4.85
Panasonic 1093	$3.90
Qume Sprint 3/5 M/S	$2.10
Radio Shack DMP130	$9.25
Star Gemini SG-10,15	$1.55

QUANTITY ONE
Volume Discounts
Ribbons for over 4000 printers

250 Sheets Colored Paper $6
Blue, Yellow, Gray, Green, Pink

VISA/MASTERCARD NO CHARGE
COD add $1.90-S&H ..... $2 per order

GK ENTERPRISES
7215 West National Ave.
West Allis WI 53214
414-259-1657

BUFFALO ENTERPRISES

Access to greater sales

3,000	User Groups	$150.00
3,400	Computer Stores	150.00
500	Mail Order Dealers	60.00
335	Computer Publications	40.00
20,000	Apple Owners	$45/M

Shipping inc. — one time use only!

Many other lists
Send for FREE catalog
BUFFALO ENTERPRISES
P.O. Box 29, Sebastopol, CA 95472
(707) 823-3239

RIBBONS WHOLESALE PRICES

ALL NEW ALL PRINTERS

BDP

(Bargains Delivered Promptly)
Post Office Box #1330
Fair Lawn, New Jersey 07410
Call Collect (201) 791-0226

Cannon A1200 & PW1156A	$65.00	doz
Data Products M-200 Cartridge	59.00	doz
Diablo Hytype II M/S Universal	36.00	doz
Epson MX-100 M/S	59.00	doz
IBM 5218/19 Displaywriter M/S	77.00	doz
Mannesman-Tally Spirit 80	62.00	doz
Okidata 80, 82, 83, & 93	23.50	doz
Okidata 182 & 193	89.00	doz
Panasonic KX-P1090, 91 & 92	94.00	doz
Qume Sprint 1, 3, 5, M/S	28.00	doz
Radio Shack TRS80 LP II, III, V	58.00	doz
Star Micronics SR-15	75.00	doz
Wang System 5 M/S	43.00	doz

Checks, Money Orders, Visa, Master Charge, UPS COD
NJ Residents add 6% Sales Tax Add 3% Shipping & Handling Charge — $1.50 Minimum

DATA TRANSFER SERVICES

*Over 450 formats!
DISK ↔ DISK
TAPE ↔ DISK
Fast, accurate, confidential

Computer Conversions
9580 Black Mountain Rd.
San Diego, CA 92126
(619) 693-1697

RIBBONS

		Black Colors
Apple Imagewriter	$3.00	3.25
Diablo HTII M/S	$2.40	
Epson MX-RX-FX 80	$2.65	3.00
MX-RX-FX 100	$3.40	3.75
LX-80	$3.50	3.75
LQ-1500	$3.75	4.05
NEC 3500	$3.95	4.50
5500/7700	$3.50	3.75
8023	$3.00	3.25
Okidata 80-82-92	$1.10	1.45
192-193-182	$4.75	5.75
Panasonic KXP	$5.95	

1-800-446-6760
1-513-435-2256 (OHIO)
MASTERCARD • VISA ACCEPTED
DEALER NETWORK SYSTEMS

Wear it... CRASH! the T-shirt.

CRASH, CRUNCH, LOGIC BOMB, PASCAL, GIGO, many others!
T-SHIRT: (white or red) ...$10, 4/$35
SWEATSHIRT: (grey).....$19, 2/$36
SIZES: S, M, L, XL. **SHIP** $1 per item.
Free illustrated brochure.

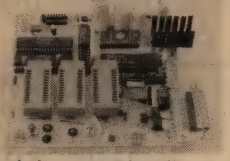
LASTWORD
Box 6221, Keene, NH 03431

The Electronic Orphanage

427-3 Amherst Street, Suite 174
Nashua, NH 03063 CS2032
(603) 882-8740 - BBS: **(603) 882-9312 8/N/1**

Timeplex multiplex or 8 channel $800.00 pair.
½ ht AT Style **Teac-Tandon** (new) $80.00.
Kurta Tablets $ Call $.
"A" & "B" size plotters from $800.00.
Artist Charts $ Call $.
Atari/Centronic 737/739.
Print Head $20.00.
AST Cards $ Call $.
Hard Drive Cards $ Call $.
M/C-Visa add 3%.
S/H extra C.O.D. $5.00.

PROM PROGRAMMER



- Stand alone, copy & verify
- Serial I/O or Parallel I/O
- Adaptable to any computer
- Zaps 8751 Micro-Controllers
- 2716-27512, 2816A-28256
- Fast Intelligent Algorithm
- Kit $99, With sockets $123
- Add $25 assembled & tested
- Plans $5, Board $20, etc...

MICRO KIT
6910 Patterson
Caledonia, MI 49316
(616) 791-9333

? THE INNERMOST SECRETS OF TI 99/4A

DISCOVER THE INNERMOST SECRETS OF ONE OF THE MOST POPULAR PC's EVER MADE

$5.95
+ Shipping

COMPUTER SHOPPER
P.O. BOX F
TITUSVILLE, FL 32781

LOOKING FOR GREAT BUYS ON VIDEO SOFTWARE?

Subscribe to *Video Life*, your Alternative Video Marketplace. Hundreds of ads, self-help tapes, how-to's and what-fors, sports, culture, music, plus hundreds more. *Video Life* is the most unique video magazine on the market today.

Send check or money order for $11.97 to *Video Life*, Dept. CS685, P.O. Box 1509, Titusville, FL 32781; or call toll free 1-800-327-9926 and charge to VISA/MasterCard.

VI NROFF

The fabulous UNIX text processing duo now for PC-Compatibles. PCVI is a large subset of the powerful, yet simple VI text editor implementing 91 of its 104 mnemonic, easily remembered commands and 9 ED/EX commands. PCROFF implements 71 of 76 (8 with macros) of the versatile NROFF text formatter commands.

PCVI provided with user's manual; PCROFF with manual, examples, paragraphing and pagination macros. DS,DD 5-1/4" MS-DOS

PCVI(TM) (intro. offer) $50
PCROFF(TM) (intro. offer) $50
Introducing The UNIX System, McGilton & Morgan $22.50
PCVI or PCROFF manual (Credit for future purchase) $10

Alternative Solutions
404 Streamside Drive
Fallston, MD 21047
Shipped ppd
MD residents add 5% tax.

UNIX is a reg. TM of Bell Labs.
MS-DOS is a reg. TM of Microsoft

$

BIG BUCKS distributing computer supplies from your home. Small towns best profits. For free details: SASE to: **John Isaacs Associates,** 555 Commercial Rd. #11, Palm Springs, CA 92262.

Can't Find COMPUTER SHOPPER?

If you can't find *COMPUTER SHOPPER* in your favorite store. Tell the retailer, then fill out the form below and return to us. We will make every effort to get *COMPUTER SHOPPER* into your favorite store as soon as possible.

Store Name _____
Address _____
City _____
St. _____ **Zip** _____
Phone _____

COMPUTER SHOPPER
Patch Publications
407 S. Washington Ave.
Titusville, FL 32796
305-269-3211

CLASSIFIED

CLASSIFIED INFORMATION

The classifieds are for **Pre-Owned Items & Software ONLY.** New equipment, Services, etc. must use regular Display space.

Instructions

In order for us to keep the ad rate low and insure accuracy, it is necessary that the following procedures are followed.

1. Type or print your ad legibly on a plain sheet of paper. Ads received that are difficult to read will be returned.
2. Write the desired category at the top of each ad. Please refer to the index, this page, if a category is not indicated, ad will be placed in the Miscellaneous section.
3. If more than one ad is submitted, use a separate piece of paper for each ad, making sure your complete name and address is at the bottom of each ad.

CLOSING DATE — 2nd Monday of the month. Example: Ads received by the 2nd Monday of October will appear in the December issue. Due to our low rates, you cannot change, cancel or receive a refund on classifieds after they are typeset. In most cases, ads are typeset within a week after they are received.

RATES

Subscribers: 25 cents per word. $5.00 per ad minimum charge. The first two words (if underlined) will be set in bold face at no additional charge. Bold face or all cap words thereafter will be fifty (50) cents per word. Special bold headings, partial lines, open space or leader dots are:

1 line of leader dots with price, $1.25 per line

6.5 point line, $1.25

10 point bold line, $2.00

Maximum of 15 characters per line

Non-subscriber rates are double all rates listed above.

REPEAT ADS

Ads running more than one time. A repeat ad will be coded at the end of the ad with month the ad started and issue ad ends. Example: 8-160. Ad started Aug. ends 160 issue or January. NOTE: Please check to make sure your ad has been correctly coded.

PROOFS

Due to low classified rates a free checking copy or tear sheet cannot be sent if proof of insertion is desired, please send $3.00 extra.

PHOTOS

A photo will draw attention to your ad. Photos are $7.00 per column inch. Please send in B/W photos, preferable 4x5's cropped horizontally. Include your name and address on the back of **each** photo. If photo looks like it is more than one inch send in money for two inches or more.

★ $5.00

★ ★ $4.00

★ ★ ★ $3.00

STARS

Have a special piece of equipment to sell? Reducing the price of an item and want to attract attention to that fact? Take advantage of our low price "star" attention getters.

It's a fact...unusual "artwork" in or above an ad draws attention to that ad and the reader retains interest in that product longer.

Get Response Quicker with "Stars" above your ad. Above is the rate for different sizes. Just mark "stars" and the price of the one you choose above your ad copy and we'll take care of the rest. Be sure to include the cost with your ad payment.

CS-ABREVIATIONS

add-post ..... add postage
add-post-AP ... add postage, all prices
FC ..... Freight Collect
MBG ..... money back guarantee
PP ..... postage paid
SASE ..... send self-addressed stamped evelope for check return or information requested
10 DRP ..... 10 day return privilege
CCR ..... check clearance required

EXAMPLES OF STYLES:

Normal

PDP 11/03 COMPUTER

Complete **OPERATING SYSTEM** with RT-11 system software plus basic. Brand new October '78. Sell complete at $7,000, or separate at:

11/03 Computer $900
Dual RZ-1 disc $1,000
32KB memory $2,800

PDP 11/03 COMPUTER. Complete operating system with RT-11 system software plus basic. Brand new October '78. Sell complete at $7,000 or separate at: 11/03 Computer $900, Dual RX-1 disk $1,000. 32KB memory $2,800. VT-52 video $1,500, GE Terminet 30 printer $800. Intertube video terminal $400. **John Doe,** POB 1234, Somewhere, USA 00000. 123-456-7890.

10 Point Centered Head

PDP 11/03 COMPUTER

Complete **OPERATING SYSTEM** with RT-11 system software plus basic. **Joe Doe,** POB 1234, Somewhere, USA 00000, 123-456-7890.

Leader Dots

Intertube video terminal $400
Joe Doe, POB 1234, Somewhere, USA 00000. 123-456-7890.

ATTENTION CLASSIFIED ADVERTISERS

The Classified Ad rates for *Computer Shopper* are now 25 cents per word for subscribers and 50 cents per word for non-subscribers, with a $5 minimum. These rates have been in force since the June issue. However, we have accepted orders at the previous rates, because they were sent prior to notification of rate change. This is the last issue we have accepted ads at previous rates. Starting with the September issue any ads received with incorrect payment will be refused and payment returned.

IMPORTANT NOTICE

Copyright laws pertaining to software can be enforced. Due to the complexity of determining what software is legal or illegal, any and all liability for copyright violations shall rest solely upon the advertiser. Patch Publishing and its staff do not in any way condone or knowingly participate in any such illegal activity.

(101) TANDY COMPUTERS FOR SALE

Arcade Masters! Figure eight auto racing challenges you. Maximum skill required! $5/disk ppd. 10XE/x4800/400 computers 48K No Basic. **Rascom,** 21228 newkirk Avenue, Carson, CA 90745. 8-82

★ ★ ★

COMPUTER STUFF!

We buy, sell and horsetrade Apples, CoCo & Model 100, Commodore, IBM & Clones. Call Now! **Shreve Systems,** 845 Lark Ave., Shreveport, LA 71105. 4-9 pm CST. 9-83

... For an offer you can't refuse ...

GODFATHER'S used computer SYNDICATE

$$$$ We have a limited selection of models I's, II's, III's, IV's, 12's, 16's, 1000's, 2000's, & 3000's. We give a full 90 day warranty. Daisy Wheel II w/tractor $800, other printers avail. Buy—Sell—Trade. **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**

Model 100, 32K, disk/video interface, A&J microdrive, cassette recorder, business software, more, $695 or trade. **Richard Cravy, 904-378-9000** evenings.

Model 12-2 disk drives, DMP-2100 plus tractor feed, printer cable and G/L software. Excellent condition $2200. Will sell separate. **501-636-0373** after 7pm CST. **Don A. Closson, D.D.S.,** 801 S. 7th St., Rogers, AR 72756.

Model 12 and Model 16. Each with 2 drives. $500 each. **415-231-1013** or **415-283-0716.** 10-82

Model 16 with 6,000 upgrade. 15 Meg hard drive. Used approx. 50 hours. Call **216-935-0301** days, **216-497-4066** evenings. 9-81

Model 4P's 2-drives excellent cond., several available $800 delivered or make offer. Days **718-627-0819 Joseph Reinman.** 9-82

Model 4p 128k, hi-res, modem and Tandy FP215 plotter with CAD software and word processor, spreadsheet, database, compiler, utilities and games $950. **Rich Gamble,** 713 Fifth, Cheney, WA 99004. **509-235-5410.**

Model One 48k E.I. LNW5/8 3-MPI DDSS (one bare) RS-232C, Alps keyboard, quick printer, Voxbox 4-O/S, Cobol, Fortran Games, (50+ disks), Desk $400. **201-685-0646, Mitch Silkotch,** 98 Catherine Lane, Bridewater, NJ 08807.

Model One, level II, 16k keyboard and monitor $75; Expansion interface circuit board, 32K $50; RS232 board $50. SASE. **Roy Kephart,** 4101 NW 19 Terr, Fort Lauderdale, FL 33309.

Models 12 & 4P Like new, $1200/$800, 2 drives per system + manuals. Model II keyboard $50. **516-599-5745.** 6-81

TRS-80 Mod I keyboard $65; Expansion Interface $175; RS232 $35; Percom DDC $30; Dual Drive $175. **David Haneburgh, 207-657-3801** after 6pm EST. 9-81

TRS-80 Model II computer. Two drives. Excellent condition. Only $995. Phone **1-813-549-9592.** Ask for **Charles.** 9-81

TRS80 Model 4P 128K. Like new. Complete 2 drives, compact, SuperScripsit, Profilet $850 or offer. **Judy Lohr, 312-747-1308.** Leave message with name/phone #. 9-83

TRS80 Model III, 64k, 2 disk drives, good working condition, $350. **G. Porter,** Dept of Math, Univ of PA, Philadelphia, PA 19104-6395. **215-898-8467.**

TRS-80 model IV standard setup. Extras include cassette, DMP120. 300 baud modem, cables and software. Make offer **Hoyt Rountree, Rt. 4, Box 217C, Thomasville, GA 31792. 912-226-2759.**

TRUE PORTABLE SYSTEM—Use anywhere—32K Model 100 "NOTEBOOK" computer; w/"Super ROM" integrated WP/SS/DB/OL ROMware; Chipmunk 360K portable diskdrive; ARMS backup battery; casette; cables; extra software/disks; all fits shoudler bag - 8 lb.; less than 50% new price - $800 + shpg. **215-582-2639.** 8-81

Tandy 1200HD 640K QuadRAM upgrade with clock, Techmar Grpahics, Surge filter MS-DOS, WordPerfect, DAC Acc., PCpaint, Multiplan, Sidekick, Friday copy2 PC and More $2500. **213-479-0665.** 9-81

CLASSIFIED ORDER FORM

Classified Dept., COMPUTER SHOPPER
P.O. Box F, Titusville, FL 32781

To figure cost of ad, the rate is 25 cents per word for subscribers and 50 cents per word for non-subscribers (50 cents per word bold face) $5.00 per ad minimum charge.

Run under heading # _____

See Index This Page

(Please type or print)

INCLUDE 25-CENTS PER WORD FOR YOUR NAME AND ADDRESS

Name _____

Address _____

City _____

State _____ Zip _____

INCLUDE 25 CENTS PER WORD FOR YOUR NAME AND ADDRESS FOR SUBSCRIBERS AND 50 CENTS PER WORD FOR NON-SUBSCRIBERS.

(For additional words, use separate sheet of paper)

Remittance for $_____ is enclosed.
You may run my ad _____ issues.

CLASSIFICATION NUMBER AND CATEGORY

COMPUTERS (Large)
(133) Burroughs Systems 295
(136) Data General Systems 295
(138) Data General, Software, Peripheral 295
(148) DEC Systems For Sale 295
(149) DEC Systems Wanted 295
(150) DEC Software, Peripheral 295
(154) IBM Systems For Sale 295
(155) IBM Systems Wanted 295
(156) IBM, Software, Peripheral 295
(166) Misc. (Hardware & Software) ... 295

MICRO COMPUTERS
(105) Altos Computers For Sale 281
(105A) Altos Computers Wanted 281
(105B) Altos Software, Peripheral 281
(106) Apple Computers For Sale 281
(107) Apple Computers Wanted 281
(108) Apple Software, Peripheral 281
(109) Atari Computers For Sale 283
(110) Atari Software, Peripheral 283
(113) Commodore Computers For Sale 284
(113A) Commodore Computers Wanted 284
(113B) Commodore Software, Peripheral 284
(114) Franklin Computers For Sale ... 286
(115) IBM Personal Computers For Sale 286
(115A) IBM Personal Computers Wanted 286
(115B) IBM Software, Peripheral 286
(132) Heath Computers For Sale 295
(132A) Heath Software, Peripherals ... 295
(134) Hewlett Packard Computers For Sale 295
(134A) Hewlett Packard Computers Wanted 295
(134B) Hewlett Packard Software, Periph. 295
(111) Homebrew Systems For Sale ... 284
(116) NEC Computers For Sale 292
(116A) NEC Computers Wanted 292
(116B) NEC Software, Peripheral 292
(112) Northstar Computers 284
(112B) Northstar Software, Peripheral . 284
(117) Ohio Scientific Computers 292
(117A) Ohio Scientific Computers Wanted 292
(117B) Ohio Scientific Software Peripheral 292
(118) Osborne Computers For Sale ... 292
(118A) Osborne Computers Wanted ... 292
(118B) Osborne Software, Peripheral .. 292
(120) MS/DOS Computers For Sale ... 292
(120A) MS/DOS Computers Wanted ... 292
(120B) MS/DOS Peripherals 292
(121) Kaypro Computers For Sale 292
(121A) Kaypro Computers Wanted 292
(121B) Kaypro Software, Peripherals .. 292
(123) Sanyo Computers For Sale 293
(123A) Sanyo Computers Wanted 293
(123B) Sanyo Software, Peripherals ... 293
(125) Sinclair Computers For Sale 293
(125A) Sinclair Computers Wanted 294
(125B) Sinclair Software, Peripheral .. 294
(101) Tandy Computers For Sale 279
(102) Tandy Computers Wanted 280
(103) Tandy Software, Peripheral 280
(104) Texas Instr. Computers For Sale 281
(104A) Texas Instr. Computers Wanted 281
(104B) Texas Instr. Software, Peripheral 281
(127) Xerox Computers For Sale 294
(127A) Xerox Computers Wanted 294
(127B) Xerox Software, Peripheral 294
(126) Misc. Microcomputers 294
(128) Misc. Micro, Software, Periph. .. 294
(129) S-100 Computers 294
(130) S-100 Compatible Peripheral ... 295
(131) S-50 Compatible Peripheral 295

PERIPHERAL & MISC. EQUIPMENT
(172) Disk Drives 295
(174) Printers 298
(178) Tape Drives 298
(180) CRTS, Monitors 298
(181) CRT Terminals 298
(182) Terminals 298
(183) Multibus Boards 299
(184) Memory 299
(186) Modems 299
(187) Word Processing 299
(188) Misc. Equipment 299
(189) Books, Magazines 299
(190) Misc. Large Systems 299
(191) CP/M Software 299
(192) Misc. Software 300
(194) Misc. Accessories & Supplies .. 300
(195) IC's and Components 300

MISCELLANEOUS
(196) Help Wanted 300
(198) Positions Wanted 300
(199) Other 300
(200) Non-Computer 300

(102) TANDY COMPUTERS WANTED

.. For an offer you can't refuse ...
GODFATHER'S used computer SYNDICATE

$$$$ I Buy, Sell, & Trade TRS-80's for cash. **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**

★ ★ ★

WANTED: Your Dead or dieing TRS-80 Modle III. Send Name, Address, Phone Number, and condition of computer, with asking price to: **Brian Sullivan,** PO Box 46894, Seattle, WA 98146. 10-82

Wanted: Old computers. See section 188. **David Larsen** for details. 7-89

(103) TANDY SOFTWARE, PERIPHERAL

Coco Ads - a monthly magazine for the color computer user. Many programs, articles, reviews, tips for the Coco, and a classified ad section. Send for free sample: **PD Software,** PO Box 13256-C, Houston, TX 77219. 10-84

Coco Users - Over 25 different program packs for your Coco. Many good programs for your library. Games, Utilities, business, Educational, music, art. Send for current catalog. **PD Software,** PO Box 13256-C, Houston, TX 77219 10-84

Collection of TRS-80 books, manuals, software, and vintage magazines. Send SASE for list. **Pecoraro,** 5409 Gridley, Riverside, CA 92505. 8-81

DOMAIN/COMMERCIAL Software! Tandy 1000 owners-Access our 1000+ disk library. Diskfull Software (DS/DD) for PC/Clones - Rent $1, buy $3 (including disk). **804-851-6864. Colony,** Box 808, Langley AFB, VA 23665. 9-82

EPROM Programmer for Model I, III, or IV. Electronics enthusiasts: Build this system for a fraction of the cost of commercially available programmers. Programs the 2716 thru 27512, 2732A, 2764A, 27128A, 2532, 2564, and 2816A. This system uses the new fast programming algorithms for EPROMs larger than 4K bytes for better speed and reliability. Send $15 to get schematics, theory of operation, construction details, and disk with software to run the system or send an SASE for more info. Also ask about our new 12-bit data aquisition systems capable of 100KHz sampling. **CPU International,** 11604 Starlight Ave., Whittier, CA 90604. 7-81

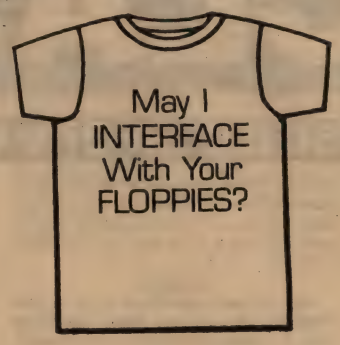
Earn $1100 Per Month With Your TRS-80, Apple, Commodore or IBM Compatible. This program will allow you to enjoy a handsome full or part-time income working in your own home and setting your own hours. This unique program has been tested and used for over **seven** years and its service has had phenomenal acceptance. We provide all the know-how, the consultation service, and all the materials needed to make this unusual business opportunity a success from the first day. If you like the idea of operating a highly profitable business out of your own home, if you like working with a computer, and if you like making money, then this could be the opportunity you have been searching for. All you need is your TRS-80, Model I, III, IV or 1000, Apple or Commodore computer with or without disk drives, a minimum of 16k memory, a reliable printer, and the desire to turn your micro into a highly profitable home business enterprise. For complete details, send $10 (VISA, MASTERCARD and **AMERICAN EXPRESS** honored) to: **Viking Inc.,** 910 Soo Blvd., Rice Lake, WI 54868. Ask for "OPPORTUNITY 86".

FREE PROGRAMS!! TRS-80-Coco/TRS80-III/TRS-80-4/TRS80-100/TRS80-200/TRS80-M-C10/Apples, Commodores. Send Stamps! **EZRAEZRA,** Box 5222-PRSE, San Diego, CA 92105.

★ ★ ★

Get Rich with your micro computer! learn how to cash in on this billion dollar industry. For free details write: **Premiere Books,** 5798 Fenwood Ct., Mentor, OH 44060. 6-82

LOAN AMORTIZATION Schedule — Bank approved, satisfaction guaranteed. Model's I, III, 4, CC, and MSDOS computers. SASE for sample printout and details. $19.50 including postage. **Computer Services,** Rt. 3, Box 710, Homosassa, FL 32646.



There's no telling what you'll interface with when you wear this T-shirt from *Tech Styles*. Only $8.50. Other shown in display ad this issue. Add $1.50 ship/H (50¢ each add'l shirt). Specify S-M-L-XL to: **TECH STYLES,** Dept. CS10, Box 1877, Winter Haven, Fl 33882-1877.

The Probability Lottery program. Select numbers weighted towards the most or least picked or random. Pick 3&4 too. See reviews in Rainbow Magazine (October 85) or *Computer Shopper Magazine* (January 86). versions for TRS-80 color ecb, 16K tape and 32k disk, and model ¾ disk. Only $19.95. **Gary Olander,** 322 Haymarket Pl, Gahanna, Ohio 43230. 10-86

"Masonic Lodge Programs maintain database of members, post dues payments, create name and address rosters or merge files for "SuperSCRIPSIT", and more. Model III version for five DOSes; Model 4/4P version uses TRSDOS 6.2.x $65 includes 28 page manual, postage, and disk. Specify DOS: **John M. Taylor,** 106 Busch Hill Dr., Wetumpka, AL 36092. 4-82

Model 100/200- send for free catalog of compact affordable software. **CSA Software,** PO Box 22261, Chattanooga, TN 37422. 6-84

Model 2-12 Software and languages for sale. Send SASE for complete list. **Rob Lee,** 25 Amaryllis Ave., Waterbury, CT 06710.10-84

Profile III + /4 + Users! Proaid III + /4 + relational report writer allows you to place fields anywhere on up to 60 lines, push left, set printer codes, suppress blank lines, sort, select on partial match, print records in multiple columns and look up related records and fields from an additional file with automatic totals (great for invoices). You get modifiable Basic programs and 25 page user manual with complete examples for only $49. Phone **214-291-1171** for VS/MC or send check/MO to **Clay Watts Software,** 68C North Loop, Cedar Hill, TX 75104.10-83

Public Domain Programs 15 + programs per disk. Business-13 disks, ed-9 disks, Communications 2-disks, utilities-16 disks, games-35 disks, total 75 disks = 1125 + programs all model 3...Also 30 model 4 disks. For information write **JaRICK SOFT,** Box 183, Fairmont, MN 56031-0183. 8-82

Public Domain software. Catalog of 141 volumes for Models I/III, $6; Three-disk catalog of 120 volumes for Model 4, $15; Four-disk catalog of 918 volumes for Tandy 1000, $20; Please specify computer and include $2 for shipping. Enclose this ad for 50% discount on your first order. MC/Visa accepted. **Fax Plus,** POB 206, Derry, PA 15627. **412-694-5750** (4-8 PM EST.) 10-83

Software Special

Savings of 60-95%. Tandy original software for Models 1, 2, 3, 4, 12, 16, 16B, 6000 MC-10 and color computers. Specify Model(s) - SASE and $1 to: **Software,** PO Box 1013, Brice, OH 43109.

Super Calender

On what day of the week were you born? TRS-80 Model 3 or 4 program displays and prints any calender between 1701 and 2099. Program displays Julian dates, computes days between dates. Use with floppy or hard-disk. On diskette with user instructions $10. **Roy Schoeller,** 500 Northpointe Pkwy #313, Jackson, MS 39211. Phone **601-956-9798.** 10-83

Survey-Boundary TRS-80/100 24k basic $29.95. Description $1. **P. Billings,** 12134

Do You Have Something To Buy, Sell or Trade?

Use

Computer Shopper Classified Ads

BODEX CORP.

224 East Main St. Marlboro Mass. 01752 Phone: 1-617-485-5115

HOURS: M-F 10-9 P.M.
SAT. 10-5 P.M.

SHIPPING FREE
UPS ONLY
CREDIT CARD or COD ADD 2%

MOST ALL EQUIPMENT
100% FROM TANDY CORP.

TRS-80 COMPUTERS

• PURE RADIO SHACK EQUIPMENT •

TANDY 3000

1 DISK 1.2 MEG 512K — **$1899.00**

20 MEG HD 512K — **$2698.00**

PRINTERS
Tandy — Star Micronics
Okidata — Nec
Call for Prices
We Have All Accessories

Tandy 3000 HL
512K w/360K Floppy $1299.00

Tandy 3000 40MB HD
640K RAM w/1.2 MG Disk
$3195.00

MONITORS
CM-1 ..... $439.00
UM-1 ..... $145.00

MONITOR ADAPTORS
Deluxe Graphics $319.00
Deluxe Text $199.00

Memory Expansion Board $379.00
Call for prices on all other accessories

Model 102 24K
$399.00

Model 200 24K
$629.00

Color Computer III
128K with RGB built in
$169.00

ALL NEW
TANDY 1000 EX
with Deskmate
50% faster 7.16MHZ
256K Xpan to 640K
One Disk Price **$569.00**

ALL NEW
TANDY 1000 SX
50% Faster 7.16 MHZ
2 Disk Drives
New Deskmate II
384K RAM
XPAN — 640K
5 Slots
90 Key Plus Keypad
And 12 function keys
$819.00

VM-4 monitor (monochrome) $115.00
CM-5 monitor (Color) $149.00
CM-10 monitor (Color) $369.00
CM-1 Can be used on SX with adaptor

20 Meg Card $609.00

20 Meg Internal
w/con ½ height $499.00

ALL PRICES CASH
ALL PRICES ARE SUBJECT TO CHANGE
TRS 80 is a trademark of Tandy Corporation

Bonnie Terr. Dept. CSD, Seminole, FL 33542. 6-82

TRS-80 software, models 1/3/4/4P, many useful programs, economical prices. Send $1 for listing: **Practical Programs,** 1104 Aspen Drive, Toms River, NJ 08753. 8-84

Tandy 1000, 512k Memory Expansion plus card. By Southwestern Digital. $135. **713-480-3296,** 2515 W. Main, #337, Houston, TX 77098. 7-83

$$$WIN with Thoroughbred, Harness, Greyhound Handicapping Software...$29.95, enhanced...$49.95. Professional Football Handicapping System...$39.95. Free information. **Software Exchange,** Box 5382CS, W. Bloomfield, MI 48033. **313-626-7208. 9-82**

Word Processor. Tandy 1000 (compiled) or BASIC for Model 1, 3, 4 (3 mode) 16K-48K, tape, disk. Full featured, with automatic wraparound, centering, justifying, underlining, editing, formatting, global search/replace, form letter generation, set fonts, insert graphics. With 20-page manual. Specify your system. $10 tape, $12 disk, $25 Tandy 1000. **D. Hinrichs,** 2116 SE 377th, Washougal, WA 98671.

(104) TEXAS INSTRUMENTS COMPUTERS FOR SALE

HUGE INVENTORY TI99/4A Hardware, software, accessories and printers. Free catalog. **Competition Computer,** 2629 W. National, Milwaukee, Wisconsin 53204. **414-672-4010. 9-85**

TI-99/4A—We are the largest dealer of mint and used hardware and software in Florida. Call or write us - we will save you money. **Glidden Electronics Inc.,** PO Box 1580, Deleon Springs, Fl 32028. **904-985-5842.9-83**

(104A) TEXAS INSTRUMENTS COMPUTERS WANTED

(104B) TEXAS INSTRUMENTS SOFTWARE, PERIPH.

Bible KJV NT on floppies, formated for use with TI-Writer send $29.95 to **J. Wood,** 46 Circle Dr. West, Montgomery, IL 60538. 10-82

FILE MASTER, a disk file utility by E&M Software, enables you to catalog, run, or delete a file with the touch of a key. Never worry about forgetting file names again; File Master remembers for you. A great time saver! Not copy protected so you can put a copy on every disk. Requires XB, 32K, DD. To order, send check or money order for $7.95 to: **E & M Software,** 1092 Kansas Ave., Napa, CA 94559. 9-82

FREE ADVENTURE GAMES! Two free adventure games, requires Adventure Command module. Will send disk unless tape requested. Pelase send $2 for medium and shipping. **L. Steven Chearis,** Box 27547, Albuquerque, NM 87125-7547. 10-82

FREE PROGRAMS!! TI99-4A/all IBMpc's, TRS-80's, Commodores, Timexes, Adam. Send Stamps! **EZRAEZRA,** Box 5222-PTSE, San Diego, CA 92105.

FREE SOFTWARE! Over 4000 99/4A Public Domain programs, available from the Free Access Library. Free help for 99/4A owners from the non-profit Helpline. Send SASE **Amnion Helpline,** 116 Carl Street, San Francisco, CA 94117 for information or call **415-753-5581** 9AM-4PM (Pacific Time), MON-SAT. Giving free help to 99/4A owners since March 1981. 9-85

PRO FOOTBALL ANALYST

BEAT THE POINT SPREAD!

GUARANTEED!

Handicap NFL/USFL games easily and profitably with you computer! Only 5 minutes/week and your local newspaper is needed to uncover **hidden** overlays in the betting line. A winning season GUARANTEED or your MONEY BACK! **$34.95 (+ $4.55 sh)** IBM, compatibles, C64/128, TI99/4A. Order **1-800-341-1950 Ext. 77.** By Mail: **GE RIDGE SERVICES,** 170 Broadway #201CS, New York, NY 10038. Write for free catalog. 9-82

LOTTO PICKER

MILLION $$ JACKPOTS! LOTTO! PICK-4! Your **IBM, C64,** or **TI99/4A** can unlock the winning combinations for you! Every U.S. and Canadian game included! Expandable! **$29.95. ORDER 1-800-341-1950 Ext. 77.** By Mail: **GE RIDGE SERVICES,** 170 Broadway, #201-CS, New York, NY 10038. Write for Free Catalog. 8-81.

Learn Speedreading with your TI-99/4A. For a two program sample cassette and free pricelist of other software available, please send $2 handling charge to: **GGS,** Box 542, Plainfield, NJ 07061.

MID SUMMER SALE

Tombstone City, TI Invaders and Car Wars all three modules only $4.99; Database Management by Navarone $39.95; Super Sketch $29.95; Computerfacts schematics drawings for the TI-99/4A $14.95. Please add $2.50 for shipping. Canada + $3. APO/FPO + $4. **Valley Computers,** 613 N. Idlewild, Kaukauna, WI 54130. **414-766-3589.**

Mini-Memory exact replacement Lithium cells $5; Supercart including GROM, RAM and replaceable Lithium cell $35; Monitor Alignment Software $20; Expand your 99/4A to RGB: Kits, Hardware, Monitors available. **DIJIT Systems,** 4345 Hortensia St., San Deigo, Ca 92103. 10-82

LIKE NEW 99/4A PRODUCTS

R/D TECHNICAL NEWSLETTER: $14 US per year for projects, news, programs now featuring Bill Gronos. **Extended Basic II plus** module $75; **GPL ASSEMBLER** package w/Intern $78; **INTERN** TI operating system book $17.95; **GRAM CARD** 128k -downloads ALL modules to disk and MORE: for PE Box $250; **TI Basic Compiler $30.** Add 3% Visa & Mastercard. Add 3% SH + I. ALL PRICES IN US FUNDS. Call or Write **RYTE DATA,** 210 Mountain Street, Haliburton, Ontario Canada K0M 1S0 **705-457-2774. 8-84**

NUTS & BOLTS. A diskfull of 100(!) utility subprograms for the TI-99/4A in XBasic Merge format. Ready to merge into your programs. With documentation, just $19.95 postpaid. And now ready, NUTS & BOLTS #2, another diskfull, another 100 subprograms, also $19.95, or both for $37 ppd. **Tigercub Software,** 156 Collingswood, Columbus, OH 43213. 5-81

New Game-for TI99/4A- Tunnels of ZOD (Excellent graphics!). Try to capture the Evil Zod if you dare. Req-X-Basic, Joysticks. Cassette only $15.95 PP. Send checks to: **Jon Wagner,** Village Green, 1321 Towerview Apt. #107, Decatur, AL 35601.

Original TI recorders $24.95; Joysticks $9.95; some miscellaneous items SASE/Call. S&H $1.95/rec, -$.95/joy, $1.90/COD. **Mike An,** 4001 Stoconga Dr., Beltsville, MD 20705. **301-937-5876** after 5pm. 9-84

Original TI99/4A Programs: $5 or less. Good games, education, bridge, checkbook. Send $1 (refundable) for description. **Down Home Computer-Craft,** Box 514-CS, Grand Island, FL 32735. 9-81

Professional Football predictor. Outstanding ten year performance record. All leagues included. Basic $20. **Arcade Action,** 4122 Glenway, Wauwatosa, WI 53222.10-86

Public Domain Forth Disks. Three special customized system disks, eight data disks of games, utilities, routines, tutorials. $3 each. **Forth Information Center,** 4122 Glenway, Wauwatosa, WI 53222. 10-86

STATES & CAPITALS

Excellent Map, Capitals, Nicknames, Postal Abbreviations, Cassette $16.95.

BIBLE BOOKS GAME

Hundreds of Clues, 9 Skill Levels, Cassette $19.95. **BOTH games** include: 1-2 players, instruction screens, sound FXs, and more! No extras required! Order or Inquire: **Trinity Systems,** 1022 Grandview, Pittsburgh, PA 15237. 9- 81

SUPER DISCOUNT CATALOG

TI-99/4A owners, get even more for your money! Expand your existing system with brand new hardware, educational, and entertainment software. Save $ with 30-70% discounts. Send for **FREE** catalog: **THE ADVENTURE STORE,** Box 320, Roscoe, IL 61073. 9-82

Slot Machine a progressive style dollar slot machine with incredible graphics and sound. It's as close to the real thing as you can get. Each game on cassette or disk costs $10 shipping included. California residents add 6% tax. To order or for free literature write **O—F—A—,** PO Box 235, Oakdale, CA 95361. 9-82

Software/Hardware for the **TI-99/4A.** Up to 30% below retail. Hundreds of items. Parallel printer interface $59; Gemini Printer SG-10 $225; NX-10 $259; Extended Basic $59; TI-Writer $29; Terminal Emulator II $21. Send $1 for complete catalog (refund w/order). Specify System. **Multi Video,** PO Box 246, E. Amherst, NY 14051. 8-84

Super Clock Support

New utility program for the CorComp Clock Peripheral: Triple Tech or stand-alone version. Three independent timers, alarm function, to interrupt routines for 12 or 24 hr. screen display keystrokes, set week-date-time independently ALL in TEXT FORMAT. Extended Basic and Assembly language. Only $19.95 (U.S.) shipping included. **Ryte Data,** 210 Mountain, Haliburton, Ontario. K0M 1S0 **(705-457-2774. 10-86**

Survey-Boundary TI-99/4A basic $29.95. Description $1. **P. Billings,** Dept. CSB, 12134 Bonnie Terr. Seminole, FL 33542. 6-82

TIGERCUB SOFTWARE, over 130 original entertainment, education and programming utility programs in Basic and XBasic on cassette or disk, only $3 each! 18 different full-disk collections, just $12 each! Descriptive catalog $1 refundable. TIPS FROM TIGERCUB full-disk collections of 50+ programs and files from Tigercub Tips newsletters, Vol. 1, II and III $15 each, any two $27, all three $35 postpaid. NUTS & BOLTS (#1) and #2, full disks of 100+ utility subroutines in XBasic Merge format, ready to merge into your own programs, $19.95 each, both for $37, with documentation, postpaid. 156 Collingswood Ave., Columbus, OH 43213. 10-83

TIPS FROM TIGERCUB, full disk of 50 programs, files from the well-known Tigercub Tips Newsletters #1-#14, $15 postpaid. Tips vol. 2, diskfull of 64 programs, files from newsletters #15-#24, $15, or both for $27. Postpaid. **Tigercub Software,** 156 Collingswood, Columbus, OH 43213. 3-81

TI Printer font module for OMNI 855, 865 Printers cartridge font module Gothic 10½12 ASCII96, Script, Prestige Elite and others. Like new $27 each MBG. **K. Louis 214-340-8815. 10-82**

TI Professional Computer Low Profile Keyboard with housing, cable original. Like Brand New in box $65 each. MBG. **K. Louis, 214-340-8815 or 492-6728. 10-83**

$$$WIN with Thoroughbred, Harness, Greyhound Handicapping Software...$29.95, enhanced...$49.95. Professional Football Handicapping System...$39.95. Free information. **Software Exchange,** Box 5382CS, W. Bloomfield, MI 48033. **313-626-7208. 9-82**

(105) ALTOS COMPUTERS FOR SALE

ALTOS LIQUIDATION!

New Low Prices

586-40	$3395
586-10	$1595
986-40	$4295
8600-12	$795

All units (except 8600-12) like new in factory packaging. 30 day guarantee, quantities limited.

BCE (202) 944-3900

Ask for Operator 28

Altos 580-10 multiuser system with MP/M II. Includes a Qume data terminal, all instruction manuals and software. Will send to you UPS. Make offer by calling **301-543-8141** or write to Ms. Tilghman, 334 Calvin Dr., Salisbury, MD 21801.

Altos 8000-12 4-user, 20 Mbyte Winchester, DD floppy, excellent condition, $1300 + shipping. **John 702-465-2473, Sage Associates,** 135 Artist View Drive, Wellington, NV 89444. 9-81

Altos Depot Service Center. Fast, efficient board exchange, repair and diagnosis on 8000, 586, and 68000. All assemblies are **Systems Tested** with manufacturer's diagnostics and our in house automated test system. **Lone Star Data Corp., 512-340-6811,** 500 Sandall, San Antonio, TX 78216. 4-84.

(105A) ALTOS COMPUTERS WANTED

(105B) ALTOS SOFTWARE, PERIPHERAL

Altos CPU's like new and used all configurations warranteed, memory expansion 8600's, 1086's, 2086's. Miscellaneous 8600, 586 boards 2-8000-7 CPU's HD2A-UK. Call **608-635-7674, Charles Kreul,** Rt. 2, Box 504, Poynette, WI 53955 .

(106) APPLE COMPUTERS FOR SALE

Apple III Software

VisaCalc, PFS Report-File, Quick File, Senior Anylist, etc. Supplies limited - Call Now! **Shreve Systems,** 845 Lark Ave., Shreveport, LA 71105. **318-865-6743.** 4-9 p.m. CST. 10-82

Apple III complete system: monitor, CP/M, Epson MX80, 3 drives, clock. Software includes Graphics, Async. communications, Word Proc., Spreadsheet, Filer, Basic, Pascal, and Statistics. Best offer. **Stephen Mulkey,** Dept. of Biology, University of Missouri, 8001 Natural Bridge Rd., St. Louis, MO 63121-4499. **314-553-6214. 9-81**

Apple II+, color monitor, disk drive, controller card, joystick, and lots of software $590; Printer optional for additional $100. Call **Walt** at **803-279-7500.**

Apple II+ computer (refurbished 48K motherboard) with new case, enhanced keyboard, numeric keypad $299 (shipping $10); BONUS: with computer purhase, get new disk controller ($20), 16k card ($20), 128k RAM ($50), 80 column ($40). 90 days warranty. VISA/MC add 4%. **BBC,** PO Box 13070, Minneapolis, MN 55414. **612-379-1020. 10-82**

Apple Macintosh computer, monitor, keyboard, disk drrive, wordprocessor, graphics package, manuals and many extras. $1150. Call **Walt** at 803-279-7500.

Attention Apple WordStar Users:

MAIL MERGE
STAR INDEX
SPELLSTAR
WORDSTAR

For Apple II, IIe, II+

60% OFF

SpellStar - Corrects spelling from 20,000 word dictionary. List Price $99 ONLY $29
MailMerge - Merges files for personalized form letters, assembles mailing lists and labels. List Price $99 . . . . . ONLY $29
StarIndex - Creates alphabetized indices and tales of contents. List PriceONLY $29
For more details on this and other super bargains, look for **BCE's** red pages in this issue.

BCE 1-800-545-7447

Ask for Operator 28

COMPUTER STUFF!

We buy, sell and horsetrade Apples, CoCo & Model 100, Commodore, IBM & Clones. Call Now! **Shreve Systems,** 845 Lark Ave., Shreveport, LA 71105. 4-9 pm CST. 9-83

CORVUS OMNINET System for Apple II computers. Extra cards, cable...$499. Call Skip 9PM CST, **312-223-1689.** 9-81

.. For an offer you can't refuse . . .
GODFATHER'S used computer SYNDICATE

$$$$ MAC Hard-Drive!! 10 MEG new Tec-Mar, Apple IIe][+][New disk drives MFG by CTI ½ ht. w/cable. 30 day warranty $75 Call us for the latest closeouts on compatables and used Apples. **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**

Monitor Blowout

While they last!!! Comrex Colour with sound input $130; NEC Amber composite input, Super-high quality $80. **Shreve Systems,** 845 Lark Ave., Shreveport, LA 71105. **318-865-6743** 4-9 c.s.t. 9-81

Lasers! Lasers!

The Lasers are here! Also Expansion Boxes, Drives, Cables, Monitors, etc. You Gotta Be Happy! COD's, VISA/MC welcome. **Shreve Systems,** 845 Lark Ave., Shreveport, LA 71105. **318-865-6743** 4-9 p.m. CST. 10-84

MO' APPLE STUFF

III Motherboard	$125
128k Mac Motherboard	$150
IIc motherboards	$225;
II+ motherboards	$100-$175
IIe enhancement kit	$60
16k boards	$30 up
III profile interface	$50
III memory bd	$40
parallel bd	$25 up
ser. & par. microbuffer	$60 up

Sup'r Mod allows connection from any comptuer to television set retail $69.96 our price $15. ARE WE CRAZY OR WHAT?? **SHREVE SYSTEMS,** 845 Lark Ave., Shreveport, LA 71105. **318-865-6743** 4-9 pm cst. 9-83

N.D.R.C.
- a better byte at the apple
II's Special

80 Col Card	$37.50
Parallel Port	$45.00
RGB Card	$79.00
power Supplies	$69.00
premium SoftCard	$125.00
II+ Motherboard	$165.00
IIe Motherboard Rev A&B	available
IIc Motherboard	Call
Disk II	$135.00
Apple III Monitor	$85.00

III's Special

Z80 Microsoft Card	$65.00
Power Supplies	$85.00
Parallel Port	$135.00
Profile Controller	$65.00
Profile Drives 5Mb & 10Mb	sold out
128 Motherboard	$165.00
256K Motherboard	$349.00
128 to 256K Memory upgrade	$185.00
LASER 128	$385.00

N.D.R.C., 8511 Manderville, Dallas, TX 75231. **214-750-9889.**

Used and leased Macintosh computers for sale call for pricing. Mac power supply repairs $65; Logic board repair $65; We also have a large stock of repair parts and boards. **504-386-2329, Jim Moore.**

(107) APPLE COMPUTERS WANTED

Apple IIe computer Wanted; with minimum configuration. Leave message, including cost at **913-649-6285.**

CASH PAID for your broken/used computers or peripherals. We'll take just about anything related to Apple computers in any quantity, no matter how odd. **617-891-6851. 9-81**

.. For an offer you can't refuse . . .
GODFATHER'S used computer SYNDICATE

$$$$ I Buy, Sell, Trade Apples. **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**

(108) APPLE SOFTWARE, PERIPHERAL

$25 APPLE BUILDER KEYBOARDS

FULL ASCII, unused, upper/lower case, all control characters, **CAPS-LOCK** and **REPEAT** keys, **NUMERIC PAD,** simple modifications for right and left arrows, parallel output, positive logic, strobe, self-test, 5 volts. Custom case available. Over 400 happy customers. New, closeout pricing to make room in warehouse. Keyboard $25. Documentation/cable/mod package $5. Spare CPU/ROM $4. All 3 ($34 value) $30. UPS additional, 5 lbs. Call/stamp for full spec-sheet. **Electrovalue Industrial,** Box 376-CK, Morris Plains, NJ 07950. 201-267-1117, M-F, 10-5. 10-84

25¢ PROGRAMS

for your "Apple". Hundreds to choose from. Educational, business, scientific, games and more. Catalog: $5 (refundable with first order.) **Public Domain Library,** Box CS3, Duncan Institute, 18 Duncan Drive, New Port Richey, FL 33552. 9-91

5 Megabyte add-on Hard Disk Subsystem for Apple or Franklin. Kit - $350. For

ALTOS 586-10 COMPUTER
(with reset button) & Altos UK 40-586 disk drive, $3500 or best offer. Both under TRW service contract. Will sell separately.
312-272-1844

technically oriented persons. **Digital Search, 803-877-9444.**

★

APPLE 400K Mac drive $119

Call for other Apple equipment

Quantity is limited. To order, send check or money order for $119 + $5 S&H to: **Pre-Owned Electronics,** POB 644, Lincoln, MA 01773, or call **617-891-6851.** Call for other Apple equipment, we can locate just about anything.

APPLE BUILDERS

Applesoft ROMS - new higher price. Apples wholesale price is now $45 per ROM. Our price is $85 per set of 6 or separately, $20 each. Genuine Apple parts. Upper/lower case video character generators, $20. Specify USA (revision 7 or later) or Asian clone version. UPS $2 per order. IC sets, manuals, keyboards. Request full flyer. **Electrovalue,** Box 376-CS, Morris Plains, NJ 07950. **201-267-1117.** 10-84

APPLE COMPATIBLE SPECIALS!

16K RAM Board II/II + $39; 128K RAM Board II/II + /Ace $89; 128K RAM Board (OK) $65; PLUSWORKS XM Software $39; 64K/80 Column Board IIe $39; 256K/80 Column Board IIe* $109; 512K/80 Column Board IIe* 139; 1MEG/80 Column Board IIe* $238; *PLUSWORKS XMe included. ; Z80 CP/M Board II + /IIe/Ace $39; 80 Column Board II/II + $49; JOYSTICK II + /IIe/IIc/Ace $14.95; JOYSTICK III w/Large Fire Button stick ; II + /IIe/IIx $24.95; QUADPORT II + /IIe/Ace $14.95; NUMERIC KEYPAD 16 Keys IIe $39; DISK DRIVE H/H II + /IIe/IIc $129; MINI SUPER VACUUM Cleaner $14.95;

ONE YEAR WARRANTY ON ALL!
Add $3 shipping. VISA/MC OK. COD OK.; Univ/School Purchase orders welcome.; Call/Write for complete price list.

NEXO DISTRIBUTION, 619-474-3328, 914 East 8th St., Suite 109, National City, CA 92050. 9-82

APPLE IIe EXTENDED 80-COLUMN CARDS

100% FUNCTIONALLY EQUIVALENT to Apple's $250 "A2B2023" card. Plugs into the AUX card slot to give you 80-column ability, an additional 64K of memory (128K total), and (requires Rev. B mother board) double hi-res color graphics. **$50 each,** includes surface UPS, add $2 for 2nd day air. **Electrovalue Industrial,** Box 376-CE, Morris Plains, NJ 07950. **201-267-1117,** M-F, 10-5. 10-84

MANUALS & SOFTWARE

These are the original, hard to find manuals and software you need: "Apple II Utilities Guide" (A2D2053), this is ProDos and its 64K and 128K utilities, disk and 150 page manual, $35. Apple IIe (enhanced) Owner's Manual with introductory disk, 192 pages, $18; Apple DOS 3.3 User Manual (A2L2002) $16; Apple DOS 3.3 Programmer's Manual (A2L2012) $12. Add UPS, $2 first, $1 each additional. Request 8 page flyer. **Electrovalue,** Box 376-CM, Morris Plains, NJ 07950. **201-267-1117,** M-F, 10-5. 10-84

APPLE MANUALS

Original IIe, IIc, II + manuals ProDOS, DOS 3.3, Applesoft you name it, we got it!! Your choice $10 each. **Shreve Systems,** 845 Lark Ave., Shreveport, LA 71105. **318-865-6743.** 4-9 cst. 9-82

APPLE PASCAL users. Pop-up *Monitor, versatile *Edit, *Util and other programs. **dogStar Software,** Box 302, Bloomington, IN 47402. 3-83

APPLEWORKS USERS! DB MASTER USERS!

TV Movie Review, Las Vegas Show Guide, send for FREE information! Stamps appreciated. **Paul Raymer,** 3464 Townhouse Drive, Las Vegas, NV 89121. 9-81

A-Peeling Ads - a monthly magazine for the Apple computer users. Many programs, articles, reviews, tips for the Apple II owner, and a classified ad section. Send for free sample: **PD Software,** PO Box 13256-A, Houston, TX 77219. 10-84

Almost Free Apple Software!

World's largest and best collection of Apple type software. Over 10,000 FREE public domain programs on several hundred diskettes. Send $3.95 for double sided demo diskette with "Catalog Filer" (c) and catalog files on one side, The other side contains Top quality demo programs. Specify Category: (1) Utility, (2) personal, (3) business, (4) educational, (5) recreation, (6) professional, (7) combination. **CSU/International,** Route #2, Box 482-A, Utica, KY 42376. 10-82

Apple Disk drive II with controller card, with documentation $100; Amdek RGB monitor card, with documentation $50; Apple repair book $10. **813-366-4169.** 8-81

Apple IIe/IIc owners! Powerful spreadsheet program available, only $29.95! Details: **David M. Churchville,** 5517 Morris St., Philadelphia, PA 19144.

Apple Items - Thunderclock Plus $70; Apple 1200 Modem $195; WordStar 3.33 $50; Minitor III $50; Apple Super Serial Card $85. All in good to new condition with manuals. Call **615-457-4330** evenings EST.

★ ★ ★

Apple Public Domain software $2.50 a disk or you furnish disk $1 each side plus $2.50 shipping; Blank disks available for $9.50 for $10; Send $2 for catalog or send $3 for catalog and demo disk. You will get a free disk of software with your software or disk order. Mac Public Domain software $4 a disk plus $2.50 shipping. Blank disks available. Send $3 for catalog and get a free disk of software with your software order. (please specify MAC or APPLE on catalog orders). We also carry brand name software. A listing send with above catalog or if requested send seperate. We also handle Apple compatible computers & hardware. Ask for more information and price list. Send check (CCR) or m.o. (US funds only) to **B&L CONSULTANTS AND SALES,** Box 461, Wabash, IN 46992. PH: **219-563-7650.** Now accepting VISA AND M/C. 9-81

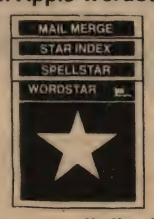
Apple Software wanted to trade. Many programs. Send list of your programs, and I'll send mine. **Mark Hartman,** 14 Silver Lane, Kirkwood, MO 63122. 8-82

Apple Software Club

Apple & Apple type software club, large selection of all types of software, home, business, education, and the latest games. Software is free to use to all members. Send for free details: **CSU/International,** Route #2, Box 482-A, Utica, KY 42376.10-82

Apple disk drive $90; Epson printer $250; Apple IIe computer $450; Monitor $80; Lots of software and books. Call **Walt** at **803-279-7500.**

Attention Apple WordStar Users:



For Apple II, IIe, II +

60% OFF

SpellStar - Corrects spelling from 20,000 word dictionary. List Price $99 ONLY $29
MailMerge - Merges files for personalized form letters, assembles mailing lists and labels. List Price $99 . . . . . ONLY $29
StarIndex - Creates alphabetized indices and tales of contents. List PriceONLY $29
For more details on this and other super bargains, look for **BCE's** red pages in this issue.

BCE 1-800-545-7447

Ask for Operator 28

BIBLE SOFTWARE

PC-BIBLE. Do your own Bible Research. Finds word or phrases. Lists all references with complete text. Counts all occurences. Sends to disk, printer, monitor. Entire KJV Bible. Edit findings with your word processor. For Apple IIe/IIc. Also I.B.M./100% compatibles, Kaypro-2, Commodore-64/128. Just $79.95. Order from: **Computer House,** 12617 Bluhill Road, Wheaton, MD 20906. 9-81

COMPUTEREYES $105; Modem with software $64.97; **RAMWORKS II** (256K) $189; **PRICES INCLUDE SHIPPING.** To order send payment or call. VISA/Mastercard accepted. PA residents add 6% Sales Tax. **Seneca Software,** 1104 Seneca Drive, RD #2, Harmony, PA 16037. **412-452-8418.**

CUSTOM APPLE PARTS

WE'VE OBTAINED a small supply of many of the custom ICs for the Apple II + and Apple IIe computers. These are real Apple parts, some new, some used, all tested and guaranteed. ROMs, keyboard encoders, P5A, P6A, video character generators, HAL/PAL, MMU etc. All priced below Apple wholesale. Enquiries from repair services who know what they want are welcome. We are NOT able to advise clone builders which parts are suitable for which clones. **Electrovalue Industrial,** Box 376-CP, Morris Plains, NJ 07950. 201-267-1117, M-F, 10-5. 10-84

"Catalog On A Disk"

Software Catalog on a disk for all types of software. Runs on any Apple type computer, has (5) categories, (1) utility, (2) personal, (3) business, (4) education, (5) recreation. Comes complete with manual and ready to go for only $10. **CSU/International,** Route #2, Box 482-A, Utica, KY 42376.10-82

Crakniques

Warning: This product is not to be used for piracy.

Crakniques is a book which will teach you how to remove copy protection from all protected programs. Crakniques teaches you the TECHNIQUES for removing copy protection, unlike Hardcore COMPUTIST and Cracking Techniques. Included with the Crakniques book are two double sided diskettes with protected programs for you to practice removing copy protection.

Crakniques will teach you how to remove copy protection from all Apple programs, not just a few.

To order send a check, money order or cashier's check for $29 to M. Haines, 215 N. Terrace, Wichita, KS 67208. Make payable to M. Haines. 10-82

★ ★ ★

DR. HAPPYHOUR'S STRIPMAN

AN ADULT GAME FOR TWO OR MORE FRIENDLY ADULTS

Add $7 for Dr. Happyhour's adult Biorhythms Apple II disk. $32.95 pp. MC/V/Choice/CK/MO. **Friendly User's,** Dept. A, PO Box 1112, Salem, VA 24153. 7-80

★ ★ ★

FREE APPLE SOFTWARE

Join our Apple Users Group and receive free Public Domain Software. $20 annual dues plus $5 initiation fee entitles you to 10 free disks per year — Art, Graphics, Business, Education, Games, Utilities, tutorials, Pascal, CP/M, miscellaneous. Large library available to copy $2 each. **Meca,** POB 1569, Edwardsville, IL 62026.9-81

FREE PROGRAMS!! All Apples, MacIntosh, IBMpc's/Commodores/TRS80's/Adam/TI99 -4A.Send Stamps! **EZRAEZRA,** Box 5222-PASE, San Diego, CA 92105.

★ ★ ★

Get Rich with your micro computer! learn how to cash in on this billion dollar industry. For free details write: **Premiere Books,** 5798 Fenwood Ct., Mentor, OH 44060. 6-82

I GIVE UP!

I can't sell 'em so I'm giving them away! Original programs, all kinds, BUCK-A-DISK. Send for free list. Stamps appreciated. **Paul Raymer,** 3464 Townhouse Drive, Las Vegas, NV 89121. 9-82

★ ★ ★

If you find yourself writing the same material again and again, you need:

A. Writer's Boilerplater

A macro/text-assembly system designed for use with AppleWriter IIe. Features: ■ Inserts or adds text components of any length (limited only by available RAM) ■ Produces and prints documents assembled in whole or in part by boilerplating, in any number ■ Easily adapts to diverse tasks ■ Provides user-friendly documentation and operation ■ Finds ready application in business, education, and law ■ Does NOT require a ramdisk or frequent floppy disk access. System Requirements: IIe or IIc, AppleWriter IIe for DOS 3.3 or ProDOS (specify). Send check or M.O. for $19.50 + $1.50 S&H to: **Pleasant Valley Press,** Route 2, Box 176, Eleva, WI 54738. 9-81

Improving DOS3.3 modified DOS adds keypad, functional delete key, faster program loading. Install on existing disks or initialize new disks. Fully DOS 3.3 compatable. $8.50 (US) PP. **D&K Programming,** Box 1728, Morden, MB R0G 1J0 9-82

Disk Liquidation! SSDD Disks 25¢

48 tpi, 5¼", Envelopes, Labels
Xidex, 3M, Nashua, Data Encore, Wabash

A large software manufacturer goofed! They made 1000's of copies of their programs and then they found the bugs in the programs. Instead of re-using these disks, they gave some of them to us to liquidate. They are top quality Xidex, 3M, Nashua, Wabash and Data Encore disks. These disks have met far more exacting tests than almost all new disks since each one has been individually written on and then tested for read-write errors according to the exacting specifications of the manufacturer. They have been bulk erased (degaussed) and are totally blank and ready for formatting. We are selling them in lots of 100 complete with envelopes and labels for $25 plus $5 shipping per 100. Return or replacement within 15 days if not 100% satisfied.
For information on this and other super bargains, look for **BCE's** red pages in this issue.

BCE 1-800-545-7447

Ask for Operator 28

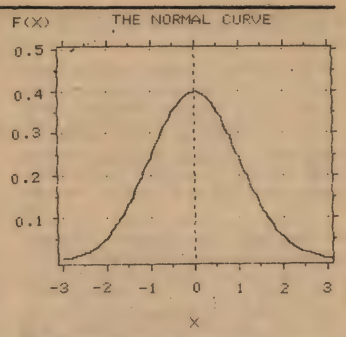
♠

II + & FRANKLIN USERS GROUP

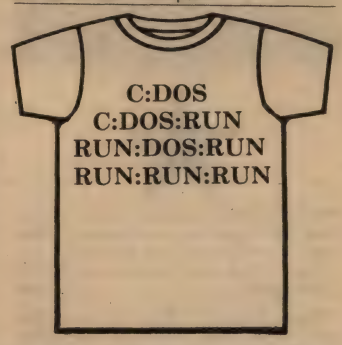
Supporting II + s, Franklins, & all compatibles, with a monthly newsletter, public domain library & personal attention. Membership $20 a year. Info SASE. **Franklin Users Group International,** 83 East Wind, Tecumseh, Mo. 65760, Modem **(417)869-5294.** 5-87

FRANKLIN/APPLE HARD DRIVES

Hardworks is a hard drive specially engineered to run on Franklins & Apples even where the Sider won't. *20 megabyte ProDOS 1.1.1 drive $999* ProDOS & DOS 3.3 software $69* ProDOS, Pascal, CP/M (Softcard, PCPI, Appli-Card, Franklin, Starcard), requires a true slot 6 $149* ACE 2120 **THE XT OF THE APPLE WORLD,** a Franklin 2100 with an internal 20 Meg Hardworks drive $1895. S&H $20 order, Visa/Mastercharge 5%. **A.S.C.I.I.,** 83 East Wind Rd., Tecumseh, MO 65760. **417-679-3526.** 8-81



Function Plotting! APPLOT is a sophisticated curve plotting program which eases the task of plotting any type of data, especially scientific data. Data may be entered from disk, the keyboard, or by typing in any function, and APPLOT will plot it. Only $18.95, APPLOT's performance meets or exceeds that of similar programs that cost $30, $40, or more. Write **Wesha Technologies,** 4911 S. Canyon Road, Rapid City, SD 57702, or call **605-348-0132.** VISA and Mastercard accepted.



Dick, Jane, & Jip will never be the same once they C:DOS:RUN. Get this hilarious T-shirt for only $8.50. See display ad this issue for others. Add $1.50 ship/H (50¢ each add'l shirt). FL residents add 5% tax. Specify S-M-L-XL to: **TECH STYLES,** Dept. CS10, Box 1877, Winter Haven, FL 33882-1877.

★

Macintosh S/W $1.00/program

Send $2 for catalog of public domain software, call **617-894-1829** or write: POB 622, Lincoln, MA 01773.

... for an offer you can't refuse ...

GODFATHER'S used computer SYNDICATE

$$$$ New Human Edge software at an incredible price!!! Retails for $250--- Wholesales for $150. Our price only $35 delivered!! For Sales Edge, negotiation edge, or management edge from the folks who brought you Mind-Prober!!! FlashCalc by Visicorp who brought you ViviCalc, incredible buy at $35!!! **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**

★ ★ ★

Like a challenge? Can you solve this mystery? Try MYSTERY ISLAND. Only $19.95 s/h incl. Send cash, check, m.o. to Fantavision, PO Box 3183, Danbury, CT 06813 for Apple IIe, IIc, II+. Ct. res add 7.5% sales tax. Please specify computer.

MIDI SOFTWARE

For Apple IIE by Syntech. Studio2 dequencer, synthesizer editor/librarians, MIDI cards, hardware, Casio CZ101 & 1000, more. Program your synthesizer! Send SASE to **Livewire,** 79 Shrewsbury, Oceanport, NJ 07757. **201-870-3115.**

MID SUMMER SALE

Mousewrite $59.95; Wishbringer $23.97; Fantavision $29.97; Dazzle Draw $32.97; Footblitzky $32.97; fontrix with 3 Fontpaks $95. Please add $2.50 for shipping. Canada + $3; APO/FPO + $4. **Valley Computers,** 613 N. Idlewild, Kaukauna, WI 54130. **414-766-3589.**

Macintosh External 400K drive for sale. Perfect condition, $200 or best offer. **Rick Taylor,** 9605 Dennis Dr., Urbandale, IA 50322.

NEW APPLE ADD-ONS

Z-80 Card (softcard cmpt.) $29.95
Advanced Logic Z-Card II w/CPM . $69.95
Disk Drive (half height, Japan) .. $119.95
Disk Drive (full height) $99.95
80 Column Card (Videx type) $42.95
Extended 80 Column w/64k (IIe) $35
16K RAM Card (II, +) $29.95
128K Ram Card (II, +) $99.95
Par. Graphic Prt. card w/cable $35.95
Orange BUFFERBOARD w/64k ... $49.95
Disk Drive Controller $29.95
Speech/Talk Card (it talks) $19.95
EPROM burner (hi-speed, 2716-128) $49.95
90 days warranty. $3 shipping. (disk drive $5 shipping. VISA/MC add 4%. **BBC,** PO Box 13070, Minneapolis, MN 55414. **612-379-1020.** 10-82

PROTECT YOURSELF!!

Secure your investments with the WATCHMAN™

Store important information about your valuables for your **home** or **business.** Lock the data away for safe-keeping and reproduce immediately in the event of a fire, theft, routine inventory; tax, and insurance purposes. Apple][+, //e, IIc. Only $29.95! 45 minute cassette tutorial with disk and booklet, $10. Data disks $2/ea. Package deal: Program, tutorial, 3 data disks **$37.50!!** $2.50 S&H, MI residents add 4% sales tax. **Charlie Software,** 1709 W. Hibbard Rd., Owosso, MI 48867. 10-82

★ ★ ★

PUBLIC DOMAIN APPLE SOFTWARE

A great way to own software at an affordable price. Well over 1000 programs on 50 diskettes - 10 disks in each of 5 categories - Business & Finance, Games, Utility, Education, & Miscellaneous - $5 per disk + maximum of $2 for shipping and handling. Send $1 for catalog refundable with order - $5 for master catalog on disk. **Peel Industries,** P.O. Box 2112, Merritt Island, FL 32952. 9-82

Professional Sports Handicapping Software: Throughbred/Harness: $29.95/Enhanced $49.95: Greyhound: $29.95/Enhanced $49.95: Football $39.95: Plus $2 S&H. VISA/MC, Specify Computer. Information write: **The Softtech Group Inc.,** PO Box 582C, Keego Harbor, MI 48033. **313-851-4925.9-81.**

Public Domain Programs - from $2. Many good programs, games, utilities, business, music, art, tutorial. Both DOS and Pro.DOS and Appleworks files. Send for catalog. **PD Software,** PO Box 13256-A, Houston, TX 77219. 10-84

RAMCARD SOFTWARE: RAMDOS- DOS 3.3 & ProDOS disk emulation software for the Apple][series computer containing up to five of the following standard slot ramcards: Legend, Saturn/Titan, Prometheus, Jameco, or Beltron. Price $25 * Full line of new & used Apple][compatible equipment, call or write for current price list * Extended 80 column card $38 * Z80 card $34 * disk drive $110 * 128k Ramcard $99 *][e numeric keypad $28.75 * 16k Ramcard $34 * Printer interface $25-99 * 80 columm (][+) $52.50 * also Power Supplies, cases, keyboards, Motherboards, Serial cards, 1meg expansion cards, clock cards * WE SERVICE WHAT WE SELL * N.Y.S. MUST ADD SALES TAX * **JET-AMBASSADOR SOFTWARE,** 914 East 222nd Street, Bronx, NY 10469. Phone: **212-231-1842.** 10-84

SAYBROOK 68000

Complete 8mHz 256k; p-System, Assembler, Pascal, Basic, quad density 5.25 drive w/controller and Saybrook drivers; All manuals. Also complete IIe system with much hardware & original software. make offer for all or part. **512-321-7981,** weekends. 9-81

SUPER EXPANDER (FOR APPLE IIe)

256K/80 Column Board $109; 512K/80 Column Board $139; 1 MEG/80 Column Board $238.

All include PLUSWORKS—XMe Software to expand Apple's Appleworks Desktop for 252K-w/256K BD. thru 1014K/w/1MEG Bd. All are 100% replacements for Apple's Extended 80 Column Card in Aux. slot.
ONE YEAR WARRANTY!
Add $3 shipping. VISA/MC OK. COD OK. UNIV/Schor Purchase Orders Welcome!

NEXO DISTRIBUTION, 619-589-7928, 914 East 8th Street, Suite 109, National City, CA 92050. 9-81

Serial cards with cables $25; CPM card $50; IIe 80 column card $25. Call **Walt, 803-279-7500.**

TANK PLATOON! infantry, artillery and armor tactics. The computer keeps track of morale, supply, movement and damage while you locate the enemy, prepare minefields, and attack with cannon, rifle, or missile, or dig in and call for fire support. Apple II, 64K, two disk drives. $26.95 to: **Dataworks,** PO Box 236, Deep River, CT 06417. 3-83

$$$WIN with Thoroughbred, Harness, Greyhound Handicapping Software...$29.95, enhanced...$49.95. Professional Football Handicapping System... $39.95. Free information. **Software Exchange,** Box 5382CS, W. Bloomfield, Mi 48033. **313-626-7208. 9-82**

Wanted: Apple boards. Phasor and any accelerator boards. Also looking for software. **Joe,** 51625 Chestnut Road, Granger, IN 46530. 8-81

WordStar SpellStar MailMerge StarIndex

+

Appli-Card CP/M Board For Apple II, IIe, II+

$129

This package includes WordStar version 3.3, SpellStar, MailMerge and StarIndex. Also included is an Appli-Card CP/M board (made by PCPI, also sold as Starcard) with CP/M 2.2, Z80B processor running at 6 MHz, 70 column display without an 80 column card (80 column display with an 80 column card). One year manufacturer's warranty.
List Price $870 ..... ONLY $129
WordStar Professional (WordStar, MailMerge, SpellStar, StarIndex) List Price $395 ..... ONLY $99
Appli-Card CP/M Board - With CP/M 2.2 List Price $475 ..... ONLY $79
For more information on these and other super bargains, look for **BCE's** red pages in this issue.

BCE 1-800-545-7447

Ask for Operator 28

★

X-Rated Adult games Apple Public Domain with high resolution pictures, two disks $24. Free Catalog with purchase or send $1 for catalog payable to: **H.M. Technology,** Dept. 1207, 1204 Ave. U, Brooklyn, NY 11223. 8-84

YARD SALE!

Apple hardware, software, firmware – up to 70% off! Send for free list, stamps appreciated. Stuff like Thunderclock, Corvus 11 mg. Drive, Mind Prober, more. **Paul Raymer,** 3464 Townhouse Drive, Las Vegas, NV 89121. 9-81

(109) ATARI COMPUTERS FOR SALE

400/800 RAM Boards- 48K/52K for Atari 400, 32K for 400/800, 16K for 800, Assembled, Tested, and Guaranteed or BARE boards with instructions and schematic. **Donald Retzlaff,** Rt. 1, Box 795, Quinlan, TX 75474. SASE for more information. 8-81

$$$WIN with Thoroughbred, Harness, Greyhound Handicapping Software...$29.95, enhanced...$49.95. Free information. **Software Exchange,** Box 5382, W. Bloomfield, Mi 48033. **313-626-7208. 8-81**

(110) ATARI SOFTWARE, PERIPHERALS

520ST owners!! Upgrade your single sided drive to double sided! Completely compatible with all ST software and peripherals. $95. **AIC,** 2600 Mar Vista Drive, Aptos, CA 95003. **408-688-5000, 1-800-242-7776. 8-90**

800/XL/XE: See what your ATARI can do! The greatest ATARI graphics demos on 2-sided disk or 2-sided full of great applications programs $4.50 each or both for $8 postpaid. Free list with order or send SASE. **J. Edwards,** 138 South Main St., Travelers Rest, SC 29690.

★ ★ ★

8-BIT ATARI owners your favorite public domain software on disks—games, music, etc. Over 50 disks available. Send $1 for catalog to: **Marion's,** 140 E. 7 St., Suite 4E, New York, NY 10009. 9-81

★ ★ ★

KARATE

ST

A PROVEN best-seller in England and Europe on other 68000 machines is now available here in the U.S. Incredible graphics, fast action, and digitized sound. $34.95 shipping included. Write for **FREE CATALOG. Curry Computer,** PO Box 5607, Glendale, AZ 85312-5607. 1-602-978-2902. TOLL-FREE order line: 1-800-628-2828 and ask for #950. 10-84

ATARI SOFTWARE CLEARING HOUSE

Tired of paying $8 a disk for Public Domain Software? Try A great new way of obtaining software. Swap copies of your software for some from our Data Base. Details and 1 year Membership fee $10. Introductory offer so don't wait, send today. **Atari Software Clearing House, c/o Wayne Tolson,** 590 Alden St., Ludlow, MA 01056. 8-81

ATTENTION ATARI 8-BIT'ers

CHOOSE FROM the largest selection of XL/XE Public Domain software. Over 800 programs on nearly 100 disks available. Entertainment, Home, Business, Utility, Educational, more! And each disk full is only $5.00! Send business size SASE for catalog. Grab a "byte" today! **Gatorware,** Box 1215, Gainesville, FL 32602. 9-82

★ ★ ★

AUTOPROGRAM

Atari 520ST Database software. Design your own **custom screens** in minutes. Create many new applications quickly without taking a night school course. Flexible **report generator. Sort** on any or **all** fields simultaneously. Search or select on all fields for reports or record updating. 200 fields per record. In memory processing with minimal disk access. Easy to use -- **quick** and powerful. Ideal for home, small business, school, church, library, etc. $59.95 **BRAINSTORM SOFTWARE,** 1760 Potter Road, Park Ridge, IL 60068 CCR.

Arcade Masters! Figure eight auto racing challenges you. Maximum skill required! $5/disk ppd. Figure eight auto racing 130XE/XL/800/400 computers 48K No Basic. **Rascom,** 22128 Newkirk Avenue, Carson, CA 90745. 8-82

Atari 400/800 Programmers Guide, 1984, Sams, 494 pages, Reg. $21.95, NOW $7.99. **CLI, Attn. Woulfe,** 5624 Grand Ave. South, Minneapolis, MN 55419. 6-82

Atari 520ST/1040ST Development kit. Includes "C" compiler, assembler, linker, editor, utilities and ICON/RCS programs. $49.95. **Patrick Eberhart,** PO Box 280151, Tampa, FL 33682. 8-84

Atari 520St Software! STwrite, STfile, STaccountant, STdraw $8.95 each; Sixteen 520ST Public Domain disk available $6.95 each; Any 3 $19.95. 10 for $59. All 20 $99. **Frugalware,** 23 East Green, West Hazelton, PA 18201. 8-81

Atari Service Manuals with Schematics featuring complete technical information for Atari 520ST, 800XL, 1050, 400/800, 810, 600XL or 5200 - Special only $17.50 each (add $2 shipping). Call **805-927-4667** VISA/MC/COD or Send to: **Electronic Dimensions,** PO Box 1846, San Luis Obispo, CA 93406.

Attention 520St memory upgraders! Problems? Use the new 520ST megabyte memory upgrade trouble shooting guide! Get that extra 512k $7.50 ppd. **Rascom,** 22128 Newkirk Ave., Carson, CA 90745.6-82

DARKSIDE SOFT-TYPE means low cost Atari public domain software. Write for free info to: **DarkSide Soft-Type,** PO Box 818, Plover, WI 54467-0818. 9-81

Free Software with every order. The best in Public Domain software for your Atari 800/800XL/1200XL/130XE/520ST. $4.95 for 8-bit disk/$6.95 for 520ST disk. Other offers included. **Patnor,** POB 370782, El Paso, TX 79937. 10-86

★ ★ ★

GAME AND Utility programs for the 8-bit Atari. Send $1.00 (refundable with order). **RWR Enterprises,** 3703 Rust Road, Annandale, VA 22003. 9-83

★ ★ ★

Get Rich with your micro computer! learn how to cash in on this billion dollar industry. For free details write: **Premiere Books,** 5798 Fenwood Ct., Mentor, OH 44060. 6-82

LABELMASTER V1.5 for the 8 bit Atarian. If you own a printer and use labels you should have this program: Send SASE for info or ONLY $7.00 PP for disk to **Black Moon Systems,** PO Box 152, Wind Gap, PA 18091. 9-81

Learn Speedreading with your XL/XE. For a two program sample cassette and free pricelist of other software available, please send $2 handling charge to: **GGS,** BNox 542, Plainfield, NJ 07061.

Letter Writer - Word processor program prints letter and envelope in one step. $7.95. **Tim Hartman,** 69239 Squaw Creek, Sisters, OR 97759.

MICROMOD 3.0

BUSINESS DBMS FOR ATARI XL/XE

The first and only DBMS for 8-bit Ataris. You've seen our display ads in all Atari mags. Any drive(s)/densities, all RAM upgrades supported. Compatible with DOS

64K/80 COLUMN CARD

for APPLE IIe only **$49.00**

FEATURES:
1. 64K Memory (makes Iie 128K Total).
2. Memory Select/De-Select.
3. 80 Column text select.
4. Supports Double High Resolution Graphics (560x192 Pixels).
5. Five Year Warranty.

APPLE Compatible Drives

II + IIe Full Height	99.00
II + IIe Half Height	99.00
IIc Half Height	99.00
Dual Half Height	220.00

Cooling Fan w/surge	29.00
Super Serial Card	59.00
CP/M Card	39.00
APPLE Compatible Disk Controller Card	39.00
APPLE II + II + 80 Column Card	49.00
16K Card	35.00
EPROM Writer	60.00

ORDER NOW!

MEMORY PLUS DISTRIBUTORS
2632 W. Baseline Road
Mesa, Arizona 85202
(602) 820-8819

- Add $3.00 shipping to all orders
- MasterCard & Visa okay
- C.O.D add $2.00
- More products available
- Dealers' inquiries invited
- Computer Club discounts

MANY MORE APPLE PERIPHERALS CALL FOR PRICES

2.5 or SpartaDos. General ledger with statements of totals, mail, invoicing, continuous statements, word processing, inventory: all fully integrated. Don't let the price fool you--these features are not scaled down for Atari! Many extras such as individual tracking/listing of prior unpaid invoices, powerful inventory, Point of sale tracks 4000-8000 model numbers at 3 locations, 4 price structure, etc. Invoice/deliveries update inventory. Up to 10,000 account records/disk. Many improvements/features over MICROMOD 2.4 including faster sort/access speed, 400 pg. printed manual with 70 pages of examples. Total price: $79.95. **MicroMiser Software,** 1635-A Holden Ave., Orlando, FL 32809. Tel. **305-857-6014.**

MIDI SOFTWARE

For ATARI computers including ST, by Hybrid Arts. Program your synthesizer! Casio CZ101 & 1000, MIDI hardware, more. Send SASE to **Livewire,** Dept. CA, 79 Shrewsbury, Oceanport, NJ 07757. **201-870-3115.**

P/D SOFTWARE unusual quality programs. Utilities games applications, printer language graphics. Over 130 disks, $5 each. SASE list. **JaxBBS,** POB 17201, Jacksonville, Florida 32216. 9-83

Professional Sports Handicapping Software: Throughbred/Harness: $29.95/Enhanced $49.95: Greyhound: $29.95/Enhanced $49.95: Football $39.95: Plus $2 S&H. VISA/MC, Specify Computer. Information write: **The Softtech Group Inc.,** PO Box 582C, Keego Harbor, MI 48033. **313-851-4925.9-81.**

★ ★ ★

Public Domain software at discount prices. Communications software, business programs, games and utilities programs. Send SASE for current price list. **Second Stage Software,** PO Box 1694, Daphae, AL 36526. 8-81

Software/Hardware for the **Atari XE/ST.** Up to 30% below retail. Hundreds of items. ST Music Studio $36; HABA Writer $56; H&D base $70; Gemini Printer SG-10 $225; NX-10 $259; Ultima II $43; HABA 10-MEG drive $640; Avetex 1200 baud $110. Send $1 for complete catalog (refund w/order). Specify system. **Multi Video,** PO Box 246, E. Amherst, NY 14051. 8-84

Supra Modem $62.75; **Computereyes** $105. **Prices Include Shipping.** To order send payment or call. VISA/Mastercard accepted. PA residents add 6% Sales Tax. **Seneca Software,** 1104 Seneca Drive, RD #2, Harmony, PA 16037. **412-452-8418.**

★ ★ ★

TERROR!!! Is that what you feel when paying high software prices??? Tired of being cheated??? End your frustration today! Atari owners, you'll be shocked and amazed!!! Send a large SASE for Free Details! Don't Delay!! No charge!---Free Details!!! **Teleplex Communications,** Software Division, Box 8342, Tacoma, WA 98408-0342.

★ ★ ★

WANDERER
ST

Already a No. 1 best-seller in Europe on other 68000 machines. 3D Graphics and 3D Glasses create a "Hologram Effect" as your starship hurtles thru space half-way between your keyboard and your monitor. RGB color only. Write for **FREE CATALOG.** Dealer inquiries welcome. **Curry Computer,** PO Box 5607, Glendale, AZ 85312-5607. 1-602-978-2902. 9-84

$$$WIN with Thoroughbred, Harness, Greyhound Handicapping Software...$29.95, enhanced...$49.95. Professional Football Handicapping System...$39.95. Free information. **Software Exchange,** Box 5382, W. Bloomfield, MI 48033. **313-626-7208. 9-82**

(111) HOMEBREW SYSTEMS

Add 5 megs to most anything, 2 drives and controller kit $300. **Digital Search, 803-877-9444.**

MICROCONTROLLER BOARD PLANS. ROM RAM RS-232 and more. 8031 CPU. Use in Robotoics, Control, add Intelligence to projects. Actual circuits plus how to design your own Microcontrollers. $12. Example programs and 8031 programming data $12. **Paul Renton,** PO Box 1525, Mercer Island, WA 98040. 9-81

(112) NORTHSTAR COMPUTERS

Advantages Wanted! Nonprofit, Tax-Exempt, organization seeks donations for community training program. We will provide fair and reasonable donation letters for your tax-deductible contribution. We will pay UPS postage. Contact: **Steve Coe,** Community Access, 95 Avenue A, NYC 10009. **212-420-1700. 10-86**

FIVE USER Horizon, four 18Mb drives. Tape backup. Runs CP/M and Basic simultaneously. TSS/C APC Basic and CP/M. Zenith terminal $4000. **Gary 619-438-7828. 9-82**

NS Horizon II 64K, good condition. Extras include Disk Jockey 8" controller, Shugart 801A 8" drive and cabinet, Televideo 950, software, backup RAM board, etc. Will sell components separately, or together for $950 or b.o. Call **Gretchen at 707-823-0904 or 823-6731** (message).

NorthStar Horizon- 4/DSDD, clock, floating/point, 64k, APC/Basic, WordStar, CPM 2.2, DOS 5.2, diskettes, documentation, terminal, printer, $600. **313-540-7936 EST. 9-83**

Northstar Advantage, 2 DSDD, 2 SIO, 64k, CP/M 2.2, GDOS, GBasic, Basic, muLISP. Best offer. Call **203-629-2880 x253. 10-82**

(112B) NORTHSTAR SOFTWARE, PERIPHERAL

ACCPAC SERIES by North Star. Accounts payable, accounts receivable, application software utilities. General Ledger. Inventory control and analysis. Infomanager, Infomanager II, North Word, $95 each or all for $400. Planner Calc Spreadsheet $19. 18 Meg. Hard disk needs work $500. **Competition Computer,** 414-672-4010. 9-81

Northstar Advantage Accounting Software $75 each **817-265-9962.**

Northstar Dimension 15 megabyte, DOS, (2) 512k users $6000 + shipping. **817-265-9962.**

(113) COMMODORE COMPUTERS FOR SALE

Amiga Public Domain software 20 disks $7 per disk; $6 when purchase all disks. Send SASE to: **MKC,** 204 W 6th, Newton, KS 67114. 5-81

★ ★ ★

COMPUTER STUFF!

We buy, sell and horsetrade Apples, CoCo & Model 100, Commodore, IBM & Clones. Call Now! **Shreve Systems,** 845 Lark Ave., Shreveport, LA 71105. 4-9 pm CST. 9-83

Commodore 64, MSD dual drive, Musicalc professional keyboard (synthesizer) & software, color monitor. $900. **M. Barnett,** 101-C Candlewood II, Selma, AL 36701.9-81

★ ★ ★

Commodore 64 Quality programs for only 50¢ Each! Utilities, Home Finance, Games. Send $5 for 10 programs on tape or disk or write for more information. **C-64 Software,** PO Box 256-C, Holland, MI 49423. 9-81

Commodore Custom Chips. US largest selection-lowest prices! In stock ICs for VIC-20, C-64, C-128, 1541/71 etc. This month Special: 6510 Ceramic $17; 6526 $14; 6560 $14.50; 6567 $24.95; 6581 $18; 7701/8701 $9; Ceramic Pla $23.50; ROMS: VIC-20/C-64/1541 $17 each; Top Discounts (6526 -$6 ect.) for volume buyers! Call! Distributors/Dealers wanted! Fast delivery! **Free 64K DRAM sets with orders!** The cheapest service: C-64 Motherboard Exchange $39.95; C64/VIC-20 Keyboard $24.95; Diagnostic Equipment & Software available! New improved power supply for C-64/VIC-20 $35 each; $27.95/15 pcs. In Stock: original Commodore Service Manuals (C-128 ect), SAMS Computerfacts! VISA, Mastercard are welcome! Catalog $3/SASE for monthly flyer! **K. Boufal-Consulting Services,** 244 Fitzwater, Philadelphia, PA 19147. **215-925-6469.10-82**

Monitor Blowout

While they last!!! Comrex Colour with sound input $130; NEC Amber composite input, Super-high quality $80. **Shreve Systems,** 845 Lark Ave., Shreveport, LA 71105. **318-865-6743 9-81**

★ ★ ★

SX-64's In Stock

$310 or will horse trade for C-64's & other stuff. Quanity limited-Call Now. **Shreve Systems, 318-865-6743. 9-81**

USER PORT CONNECTORS for Commodore 12/24 pins, Cinch or equiv. 2/$5.00 or 5/$10.00 postpaid. CCR. **Thomas Savage,** PO Box 75, Bethpage, NY 11714. 9-82

(113A) COMMODORE COMPUTERS WANTED

★ ★ ★

Wanted: Dead or Alive

Commodore-64's & 1541's & selected peripherals. Give us a Holler! **Shreve Systems, 318-865-6743** 4-9pm CST. 7-81

(113B) COMMODORE SOFTWARE, PERIPH.

1000'S OF the best programs available for the C64/128. 50 great programs on a double sided disk for only $7.50, or 150 on 3 disks for $19.95! Games, business, educational, graphics, musical, send large SASE for a free program listing. **VAS Enterprises,** Box 4632-C, Huntsville, AL 35815. 9-82

100's of FREE SOFTWARE programs for Commodore-64 and C-128 (plus CP/M programs for C-128) available through the PUBLIC DOMAIN USERS GROUP. For information send large SASE to **PUBLIC DOMAIN USERS GROUP,** Box 1442-CO, Orangepark, FL 32067. 8-81

100's of Public Domain Programs for the 64. Catalog $4. Games, reference, utilities, you name it, we've got it, give us a try. **Robert Corriveau,** POB #5662, Orlando, FL 32855. 9-82

10 CENTS EACH

C64 PD programs on disk ● **NO** rental fees ● **NO** postal fees ● **NO** clubs ● **NO** future junk mail ● Just good software, low prices, fast service, large variety (over **3700** programs), a two week guarantee, and personalized service. My introductory offer - 2 disks - both full of programs on both sides. The first has 50+ sample programs, and the second, my listing (in program form) for printer or screen. These + information, 1st class mail **$5.00** (Less than **10 cents each** program!)

NO STRINGS

Eric Richardson, 6230 Lark Valley, San Antonio, TX 78242. 8-81

1520 PRINTER/PLOTTER $85.00 PP UPS, with factory warranty and free users manual disk. **Thomas Savage,** PO Box 75, Bethpage, NY 11714. 9-82

50 GAMES for the C64/128 on a double sided disk for only $6.00! Business programs $7.00. **Lee,** 279 Noles Road, New Market, AL 35761. 9-81

★

64 DRAWER, draw, color, load and save hires pictures plus 2 **Free Games** (Commodore 64 only). Specify tape or disk. Send $5.95 check or M.O. to **Roy Brewer,** 5122 McIntyre Dr., Knoxville, TN 37914. 9-81

ADULT ADVENTURE Game "Naughty Bytes." A Ribald Masterpiece for your computer $20.00. **Life** - Machine Code version of the classic pattern producing program, $10.00. **Hyperball** Pinball at its best, $12.00. All programs on Commodore-64 disc. Go Berzerk - Get all three programs for a mere $35.00. **FTW Products,** 154 S. Hedges St., Dayton, Ohio 45403. 7-83

AN ADVANCED BBS FOR YOUR COMMODORE-128! Dial-Your-Match is the most advanced BBS you can buy for your Commodore-128. Just look at the features: Uses all the features of 128 mode, 300 or 1200 baud, 40 or 80 column mode, use any number of disks or hard disk, Fully automatic - maintenance free, Full MATCHMAKER ability, 20 Message Boards, 20 Information Files, Add comments to public messages, You can easily define up to 50 questions, Text-file based, easily edit anything! Full Userlevels - start a subscription BBS, Easily restrict caller access, All SYSOP functions can be used remotely, Edit files or catalog the disk remotely, BUILT-IN TERMINAL MODE WITH DOWNLOAD! Function keys to chat, or dump caller, Split-Screen mode for SYSOP to browse caller, Musical alert to chat mode, Automatic accurate time and date, Dial-Your Match Network to exchange messages with other Dial-Your-Match BBS systems, Network forwarding to avoid toll calls, Automatic network transmission at night, High-Tech Wait-For-Call Panel, Written in BASIC, unprotected on disk, Many more advanced features. Order by Modem: use 300 Baud and dial 1-818-840-8066 or send SASE to: **BBS-128,** PO Box 6055, Burbank, CA 91510.

★ ★ ★

ARB COMMODORE BBS: Use with 1-5 drives, IEEE drives, hard drives, 1571 DD in 1571 mode & most automodems. Download/Upload using Punter/Xmodem/ASCII Protocols, War Room, 27 Msg. Categories, Story Bd., Vote Section, Bulletins, Chat Mode, E-Mail, **Dating Board,** Remote Sysop, automatically cycles messages, 300/1200 baud & more! INCLUDES SOURCE CODE, manual & **Free** terminal prg! Only $63.95. Call BBS at 718-645-1979; (voice) 718-336-2343. **L&S Computers,** PO Box 392, Brooklyn, NY 11229. 9-85

Amiga Public Domain Software! $6.95 each. 10 for $59. All 20 $99. **Frugalware,** 23 East Green, West Hazelton, PA 18201. 8-81

★

Attention Commodore 64 FOOD LOVERS. The "COMPUTER CHEF" IS HERE!!! Computer cookbooks are now available for you on diskettes for your Commodore 64. They are quick and easy to use. We have Appetizers, Candy, Casseroles, Chicken, Quickie Meals, Desserts, Mexican, Microwave, Singles/Doubles and Seafood with many more available soon. Eash DISK sells for $5.95; any 3 selections $15.95; a set of any 10 $49.95. Please send check or money order to **Computer Chef, Crescent Branch,** PO Box 7451, Golden, CO 80403. Send SASE for additional information. Please allow 3 to 4 weeks for delivery. **303-642-0330. 8- 85**

★ ★ ★

BIBLE HANGMAN, ARMOR-MAN, Action Graphics, and Sound make this childhood game an exciting way to learn People & Places of the Bible. Over 200 randomly selected People or Places to play against, or make up your own games. 3 levels of difficulty challenge both children and adults. Send $20 for DISK/TAPE or inquire to: **TRINITY SYSTEMS, ARMOR-MAN,** 1022 Grandview, Pittsburgh, PA 15237. 9-81

BIBLE SOFTWARE

PC-BIBLE. Do your own Bible Research. Finds word or phrases. Lists all references with complete text. Counts all occurences. Sends to disk, printer, monitor. Entire KJV Bible. Edit findings with your word processor. For Commodore-64/128. Also I.B.M./100% compatibles, Kaypro-2, Apple IIe/IIc. Just $79.95. Order from: **Computer House,** 12617 Bluhill Road, Wheaton, MD 20906. 9-81

BLACKJACK-C64; 1-3 players, color graphics features hit, stand, double down, split disc $7.95. 10 day money back guarantee! **Blackjack,** PO Box 1018, E. Palatka, FL 32031.9-81

Best Software available for C64 and 128. Great selection, lowest prices, 2-$7. Free catalog. **MCC,** PO box 635, Irmo, SC 29063. 9-81

Build An EPRO, Programmer for your Commodore 64 or Vic-20 computers for under $25. For plans and programs send $5 to: **H.A.L. Electronics,** PO Box 532, Nauvoo, IL 62354. 6-83

C128/64 public domain collection $10; includes games (Monopole), utilities (C128 bootmaker), applications (wp.) **Francis,** 365C Hunter, Staten Island, NY 10306. 10-82

C64/128 Software. Fun Stuff has seven fun and educational programs. **Practical Stuff** has seven file and financial programs. $15 each or write for information to: **ALLSTUFF SOFTWARE,** PO Box 56442, Riverside, CA 92507.

C64/128 mailing lists and software! Ideal for small dealers/users. Best programs with lowest prices ever! Free offers: **CCS-C5,** 3119 Isabel Drive, Los Angeles, CA 90065. 10-83

C64-Apple programs cheap! Write: **Softwaire Shack,** Box 133-CS, Fresno, Ca 93707.4-86

C-64 Disk Drive $119.95 ($5 shipping), 1541 compatible, cooler operation; **Data Cassette:** $12.95 ($3 shipping). 90 days warranty. VISA/MC add 4%. **BBC,** PO Box 13070, Minneapolis, MN 55414. **612-379-1020. 10-82**

C-64 Public Domain software. Rent $1 per volume. Buy $3 per volume. Demo disk $5. Infor $1. **Girard,** 756 Fishpond Rd., Kelso, WA 98626. 10-83

★ ★ ★

CHEAP BUSINESS SOFTWARE for IBM compatibles. Commodores. For you own use and for making money. These are complete business setups, featuring our own guaranteed user friendly, super fast (compiled Pascal) programs and advertising materials. **MAILING LIST MANAGER:** A super moneymaker for three years. Print mailing lists for $6.50 that sell for up to $60 per thousand. 9 commands plus an initial database of up to 10,000 names, to use or sell. Complete program plus sample database of 300 names, $30. **CUSTOMIZED BUSINESS FORMS:** Almost pure gold. For small businesses, mailorder, professional salesmen who can't afford hundreds for customized forms. Prepares beautiful Purchase Orders, Quotations, Invoices filled out plus all calculations, including taxes, YTD, and monthly summaries, from plain paper. Comes off printer ready to sign and mail. Registered owners copy and sell or share, and earn 50% (up to $50 per order) for customizing. Your package, $30. **ACCENT SERVICES,** POB 1722, Simi Valley, CA 93062. 8-80

CHEMISTRY LAB C-64 Seventeen Programs (Disk Only) covers the entire field of Basic Chemistry. Total price $20.00. Send payment to: **Dick Baker,** 1412 Jefferson Ave., Yakima, Wash. 98902 7-81

CODE CRACKER is a collection of disk backup and file copy programs which provide alot of bang for the buck. You will receive SOLASDISKBACKUP which maps out the disk on-screen before it copies it, 4MINUTEBACKUP which copies almost anything at high speed, SEQFILE READER to directly view sequential files, PROGRAM COPIER which copies individual program, sequential or relative files. For C64/128 $18.95. **SOLAS PRODUCTS,** Box 665, Springhouse, PA 19477. 215-723-4597. **"Because a clean copy matters!"** 9-81

COMMODORE 64 & C-128 Public Domain Software. 250+ disks, reasonable prices. Send $1 for catalog, refundable with first order. **NGCCUG,** PO Box 250, Clio, MI 48420. 9-82

COMMODORE 64! Software, programs, and backups. Send for list. **Disk Security Services,** PO Box 1282, Glastonbury, CT 06033. 9-85

COMMODORE BRAND 64 & 128 SOFTWARE CLOSEOUT 50 TITLES INCLUDING INFOCOM $1.-$5. **KABAT,** 3500 NW 119th ST., MIAMI, FL 33167. **305-685-5422.**

Commodore 64 Software hundreds of superb programs at giveaway prices. Free information. **Joel Downey,** 7625 Hutchinson Ave., Pittsburgh, PA 15218. 10-82

Commodore Custom ICs! U.S. lowest prices, up to 65% less than Commodore dealer prices! Distributors/Dealers wanted-Catalog $3/SASE for flyer! **K. Boufal-Consulting Services,** 244 Fitzwater, Philadelphia, PA 19147. **215-925-6469.**

Commodore Sound Library! Digital recorded sounds for your programs. Recorded with Covox voice recorder then stored on 2 disks. Uses BASIC commands. Great sound effects. Animals, trains, weather, horror, many more. Send $19.95. **Eric Beckett,** 8619 S. Sharon Dr., Oak Creek, WI 53154. 10-82

★ ★ ★

DR. HAPPYHOUR'S STRIPMAN

AN ADULT GAME FOR TWO OR MORE FRIENDLY ADULTS

Add $7 for Dr. Happyhour's Adult Biorhythms C-64 disk $32.95 pp. MC/V/Choice/CK/MO. **Friendly User's,** Dept C, PO Box 1112, Salem, VA 24153. 7-80

Education strenghten your vocabulary: penny a word; $5/disc. **Edutape,** 910 Sunset Circle, Dalton, GA 30720. 10-83

Engineering Mathematics: curve fittings, integrations, linear systems. Eigenvalues, differential equations, FFT, splines, simplex algorithm, polynomial roots. Commodore-64 disk ($18). **Alan Chung,** 417 North Curtis #B, Alhambra, CA 91801.10-83

★ ★ ★

FREE! Catalog of new, recent C64/128 Archival Software. Best selection, lowest prices, same-day service! All programs guaranteed. **SSI,** GPO Box 31615, Orlando, FL 32862. 10-83

FREE PROGRAMS!! Commodore-64/Commodore-128/Commodore + 4/Commodore -16/VIC-20/Apples/TRS80's/IBMpc's/Adam. Send Stamps! **EZRAEZRA,** Box 5222-PCSE, San Diego, CA 92105.

★ ★ ★

Get Rich with your micro computer! learn how to cash in on this billion dollar industry. For free details write: **Premiere Books,** 5798 Fenwood Ct., Mentor, OH 44060. 6-82

United Computer Resources

IBM™ COMPATIBLE

QUANTITY DISCOUNTS FOR VARs, SCHOOLS, DEALERS, and CORPORATE PURCHASERS AVAILABLE

Prices based on items in stock and subject to change without notice.

BELTRON™ 8088

BELTRON MONO
$795.00
BELTRON COLOR
$995.00

FCC Approved
640K, 2 Drives, Mono Card, or Color Graphics Card, TTL or RGB Monitor, Keyboard.

BELTRON GRAPHICS SYSTEM

- MITSUBISHI EGA Monitor $399.00
- EGA Card $225.00

UPGRADE YOUR PRESENT SYSTEM

HARD DRIVE KITS
20 MB w/controller $399.00
30 MB w/controller $499.00

MODEMS Hayes 1200/300 compatible
Internal $125.00
External $145.00

MATH COPROCESSOR 8087 ..... Call for prices

COMPUTER COMPONENTS AND ACCESSORIES

MOTHERBOARDS

640K IBM™ Compatible Motherboard w/0 K ..... $ 95.00
640K IMB™ Compatible 8Mh Turbo Motherboard w/0 K $125.00
640K IBM™ Compatible 10Mh Turbo Motherboard w/0 K $150.00
640K 6 & 8Mh AT Turbo Motherboard w/0 K $499.00

EXPANSION CARDS

PC+PLUS Disk I/O Card (2 Serial, Parallel Clock & Game) ..... $ 79.00
PC+PLUS Monochrome Graphic Card/Printer Port ..... $ 69.00
PC+PLUS Color Graphics ..... $ 49.00

DISK DRIVES

TEAC 55BV ..... $ 89.00
CHINON Floppy Drive ..... $ 85.00

MONITORS

TTL ..... $ 85.00
RGB $299.00
EGA $399.00

PRINTERS

SEIKOSHA $195.00
EPSON FX85 ..... $379.00
EPSON FX286 ..... $499.00

CASES

SLIDE OR FLIP TOP ..... $ 28.00

POWER SUPPLIES

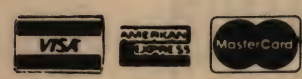
150 WATT Power Supply ..... $ 69.00
192 WATT Power Supply for AT ..... $ 99.00

KEYBOARDS

Enhanced Keyboard for XT ..... $ 49.00
Enhanced 5151 Keyboard for XT ..... $ 69.00
AT lookalike Keyboard for XT ..... $ 69.00
AT Keyboard ..... $ 69.00

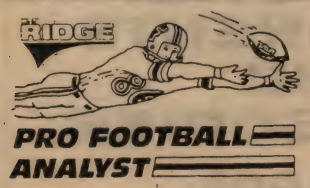
QUANTITY 10 OR MORE
10% DISCOUNT TO DEALERS

TERMS AND CONDITIONS: $3.00 Handling per box, Min. Handling $5.00
Above prices are prepaid cash prices. C.O.D. add 5%. Credit cards accepted with 3% surcharge. Above prices apply only to supplies in stock.



931 Arch Street • Philadelphia, PA 19107 • (215) 627-5454
4005 Locust Street • Philadelphia, PA 19104 • (215) 387-8600
5502 Kenilworth Ave. • Riverdale, MD 20737 • (301) 864-5055
64 Second Avenue • New York, NY 10009 • (212) 473-5011
1301A W. Gaylord Ave. • Long Beach, CA 90813 • (213) 491-0640
10412 Fall Forest Place • Great Falls, VA 22101 • (703) 430-5746
503 N. LaSalle • Chicago, IL 60610 • (312) 670-4408
73 Main St. • Norwalk, CT 06851 • (203) 847-8982
1651 Crofton Blvd. #3 • Crofton, MD 21114 • (301) 261-3141 (Wash) • (301) 793-0210 (Balt)
1690-D Cobb Pkwy., S.E. • Marietta, GA 30062 • (404) 988-0900

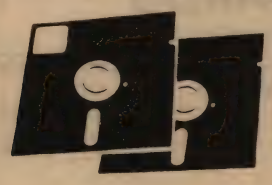
ADULTS ONLY... Interactive fantasy game "THE LOVEGAME" for two or more intimate players. Amusing and suggestive trivia quiz format with provocatively sensual "scoring" system, $24.95 postpaid-**Alva Data**, Dept. C2, 28 Alva St., New Bedford, MA 02740. Commodore 64/128 disk to tape. State you are 21 or older. 10-83



BEAT THE POINT SPREAD!

GUARANTEED!

Handicap NFL/USFL games easily and profitably with you computer! Only 5 minutes/week and your local newspaper is needed to uncover **hidden** overlays in the betting line. A winning season GUARANTEED or your MONEY BACK! **$34.95 (+ $4.55 sh)** IBM, compatibles, C64/128, TI99/4A. Order **1-800-341-1950 Ext. 77.** By Mail: **GE RIDGE SERVICES,** 170 Broadway #201CS, New York, NY 10038. Write for free catalog. 9-82



Disk Liquidation! SSDD Disks 25¢

48 tpi, 5¼", Envelopes, Labels
Xidex, 3M, Nashua, Data Encore, Wabash

A large software manufacturer goofed! They made 1000's of copies of their programs and then they found the bugs in the programs. Instead of re-using these disks, they gave some of them to us to liquidate. They are top quality Xidex, 3M, NaSHUA, Wabash and Data Encore disks. These disks have met far more exacting tests than almost all new disks since each one has been individually written on and then tested for read-write errors according to the exacting specifications of the manufacturer. They have been bulk erased (degaussed) and are totally blank and ready for formatting. We are selling them in lots of 100 complete with envelopes and labels for $25 plus $5 shipping per 100. Return or replacement within 15 days if not 100% satisfied.
For information on this and other super bargains, look for **BCE's** red pages in this issue.

BCE 1-800-545-7447

Ask for Operator 28

ARROW EXPRESS
THE BRITISH SOFTWARE CONNECTION

Free Membership in software club specialising in the top **British** C-64/128 programs. Generous members discounts, introductory offer. Free Catalog, membership & reviews (no STRINGS). **Arrow Express,** Box 205-S7, Rossland, B.C. V0G 1Y0. 9-91

Do your friends say you're full of it? Let them test it with this Boolean shirt. Only $8.50. Add $1.50 ship/H (50¢ each add'l shirt). Specify S-M-L-XL to: **TECH STYLES,** Dept. C10c, Box 1877, Winter Haven, FL 33882-1877.

MILLION $$ JACKPOTS! LOTTO! PICK-4! Your **IBM, C64,** or **TI99/4A** can unlock the winning combinations for you! Every U.S. and Canadian game included! Expandable! **$29.95. ORDER 1-800-341-1950 Ext. 77.** By Mail: **GE RIDGE SERVICES,** 170 Broadway, #201-CS, New York, NY 10038. Write for Free Catalog. 8-81.

Light Pen kit - complete! components, listings, tips, C64/C128. $15. **SJH,** 24-2 Church St., Maiden, MA 02148. Now See Category 200! 8-80

MIDI SOFTWARE

For C64/128 computers by Syntech, Triangle, Sonus, Hybrid Arts, Enharmonik. Program your synthesizer! Casio CZ101/1000, MIDI hardware, more. Send SASE for information. **Livewire,** Dept. CC, 79 Shrewsbury, Oceanport, NJ 07757. **201-870-3115.**

MID SUMMER SALE

Personal Accountant by Softsync $12.95; Pooyan and Moonshuttle cassette and disk version included both programs only $9.95. Please add $2.50 for shipping. Canada + $3. APO/FPO + $4. **Valley Computers,** 613 N. Idlewild, Kaukauna, WI 54130. **414-766-3589.**

NOTICE

Due to the response of our past mailings, we have developed the **Keyboard Innovations Home System.** This is an easy to use, multi-purpose, menu-driven program that includes:

A. An Address Book program that not only stores addresses, but will also print mailing labels, a phone list, or the entire book. It searches three different ways and sorts according to **ANY** field.

B. A Calculator that can handle all your calculations from the easiest to the most complex.

C. A Checkbook Balancer. A quick and easy way to keep that checkbook in check.

Screen color options also available. One disk drive is required with your C-64. Send $20.00 cash, check or M/O to: **KEYBOARD INNOVATIOS,** Dept. CC, PO Box 15647, Sarasota, FL 34277. 9-81

★ ★ ★

OVER 3500 Public Domain C64 programs to fulfill your every want or need. Select 20 progs. of your choice for $8.95, or 100 for $25. Send $4 for a double sided, postpaid demonstration disk with catalog. **Eric Richardson,** 6230 Lark Valley, San Antonio, TX 78242. 3-81

Professional Sports Handicapping Software: Throughbred/Harness: $29.95/Enhanced $49.95: Greyhound: $29.95/Enhanced $49.95: Football $39.95: Plus $2 S&H. VISA/MC, Specify Computer. Information write: **The Softtech Group Inc.,** PO Box 582C, Keego Harbor, MI 48033. **313-851-4925.9-81.**

RENT AND COPY!

C-64 PUBLIC DOMAIN!

43 VOLUMES-RENT AND COPY FOR $1 each or we copy for you! $3 per volume. Sample $5 (17 files). Mastercard/VISA! Recorded info-order **619-941-3244** (anytime) or #10 SASE (Specify Commodore): **Futuresystems,** Box 3040 (C), Vista, CA 92083.

STATISTICAL PACKAGE: Variance, Linear Regression, Gaussian, F. Student's, Chi-Square Distributions Anova. Latin Square. Commodore-64 disk ($18). **Alan Chung,** 417 North Curtis #B, Alhambra, CA 91801.9-82

Special: Model with Software $35.97; **Computereyes** $105; **Prices Include Shipping.** To order send payment or call. PA residents add 6% Sales Tax. VISA/Mastercard accepted. **Seneca Software,** 1104 Seneca Drive, RD #2, Harmony, PA 16037. **412-452-8418.**

Super handicap: Complete C-64/128 Thoroughbred Handicaping program. Adjusted speed/track figures, form, class, fractional times. 18 page booklet included. PO Box 1021, Ft. Meade, MD 20755. 8-81

★ ★ ★

UNIQUE SOFTWARE for C64/VIC 20. Games, hobby, home applications. Send two stamps for your free catalog to: **Reilly Associates,** Box 17144-CS, Rochester, NY 14617. 8-81

VIDEO TUNE-UP disk converts C64/128 into full function color bar generator. It produces all standard test pattern (crosshatch, rainbow, gray scale, purity field, etc.) plus it runs an automatic video test. A special **Bar Sweep** pattern (available only on expensive video analyzers) is included free. Monitor/television tune-up instructions included, $18.95. **Solas Products,** Box 665, Springhouse, PA 19477. 215-723-4597. **"Because a clear picture matters!"** 9-81

WE BUY used Commodore 64/128 Software. Games, copiers, etc. Originals only, copies aren't accepted. Send your software list and SASE for price quote. **Systems,** 1039 Blueberry Court, Edison, NJ 08817. 9-83

$$$WIN with Thoroughbred, Harness, Greyhound Handicapping Software...$29.95, enhanced...$49.95. Professional Football Handicapping System...$39.95. Free information. **Software Exchange,** Box 5382CS, W. Bloomfield, MI 48033. **313-626-7208. 9-82**

Commodore 64/128/CPM public domain and backups guaranteed no lower prices. Send for details. **MBK,** 1849 Cleveland Ave., Norwood, Ohio 45212. 10-82

(114) FRANKLIN COMPUTERS FOR SALE

Franklin 2000 Is the right choice for an Apple Compatible. Call or write us—we will save you money on your computer & software. **Glidden Electronics Inc.,** PO Box 1580, Deleon Springs, FL 32028. **904-985-5842.** 9-83.

WordStar SpellStar MailMerge StarIndex

+

Appli-Card CP/M Board For Apple II, IIe, II+

$129

This package includes WordStar version 3.3, SpellStar, MailMerge and StarIndex. Also included is an Appli-Card CP/M board (made by PCPI, also sold as Starcard) with CP/M 2.2, Z80B processor running at 6 MHz, 70 column display without an 80 column card (80 column display with an 80 column card). One year manufacturer's warranty.
List Price $870 .....ONLY $129
WordStar Professional (WordStar, MailMerge, SpellStar, StarIndex) List Price $395 .....ONLY $99
Appli-Card CP/M Board - With CP/M 2.2 List Price $475 .....ONLY $79
For more information on these and other super bargains, look for **BCE's** red pages in this issue.

BCE 1-800-545-7447

Ask for Operator 28

(115) IBM PERSONAL COMPUTERS FOR SALE

2.5 MB for IBM PC

Diskdrives. 2-8 inch DSDD Shugart 860-1 in case with power supply, disk controller for 2-8 and 2-5 inch drives, software, cables, instructions, and 120 DSDD Dysen 8 inch disks (most unused) Price $875. Telephone **315-337-5714, 315-339-0800.**

★ ★ ★

ABSOLUTELY SMASHING SOFTWARE $5.95 PER DISK. DOSamatic, PC-DeskTeam, PC-Outline, PC-Write, AutoMenu, File Express, Commercial Unprotect, Utilities Galore, Print Control, plus many more! IBM PC, PC Jr, or MS-DOS Compatibles. Free Catalog. **SMASHING,** 33495 Del Obispo, Suite 160 F, Dana Point, CA 92629. 8-82

★

★ ★

BIG GARAGE SALE

Save even more on high quality computers! We've got some returned and used items we need to clear out of our warehouse. All of this equipment has been tested and is guaranteed to be in good working order upon arrival.
Be sure to see our RED FULL PAGE SECTION for other bargains.
Columbia Computer, 256K, 2 Floppy Drives $549
Columbia Keyboard (Keytronics 5150) $59
Olivetti M18 (Made by Corona), 512K, 2 Floppy Drives, Keyboard (Keytronics 5150) $629

BCE 1-800-545-7447

Ask for Operator 28

★ ★ ★

COMPUTER STUFF!

We buy, sell and horsetrade Apples, CoCo & Model 100, Commodore, IBM & Clones. Call Now! **Shreve Systems,** 845 Lark Ave., Shreveport, LA 71105. 4-9 pm CST. 9-83

★ ★ ★

HP LIQUIDATION

HP 110 Portable - 256K RAM, Lotus 123, Modem/software, 16 line screen, reconditioned/tested/warrenteed by HP, 10 day return guarantee, free shipping, quantities limited. VISA/MC accepted. $859. **Tectran 1-401-467-8888.**

IBM PCJr 128k Quadram expansion chassis monitor, internal modem, joystick, Panasonic KXP1091 printer, DOS, basic, Writing Assistants, other software $1600/negotiable. **512-474-8350, Robert Robinson,** 806 W 24th 200, Austin, TX 78705.

★ ★

IBM XT/AT COMPATIBLE

Bargains buy, Bare main 640K Motherboard $27 each; TURBO Board $42 each; XT/AT peripheral cards also available quantity discount available. Dealer inquiries invited. Details contact: **REGINA CO.,** PO Box 1361, S.F., CA 94101. **415-731-3513.** 10-82

JXI

You can have it now! IBM JX with two 3.5 inch floppy drives. Expansion chassis with a 5.25 inch floppy drive for converting software to 3.5 inch drives. Monochrome monitor and all manuals and DOS. $3200 complete. **402-466-8108.**

.. For an offer you can't refuse ...
GODFATHER'S used computer SYNDICATE

$$$$ Make sure you see our full page ad in this issue. You can save megabucks in quantity over IBM, for our 'AT-Compatible'!! We are trying to find a piece of software that won't run on it but runs on IBM's. Haven't had any luck yet. Please help. Look us up in the index in the front. Now shipping. **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**

(115A) IBM PERSONAL COMPUTERS WANTED

★ ★ ★

COMP-USED

National Listing Service. Buy/sell and computer item, new or used, without a broker. It's quick and easy over the phone. Buyers-NO CHARGE. Sellers-$19.95. You must use a touch tone phone. Open 24 hours every day. **203-762-8677.** 10-82

★ ★ ★

Comp-Used

All used products over $100. Buy/sell through nationwide listing service. **NO CHARGE** for buying direct from owner. **NO RISK** for sellers - 6% commission when successful. Open 24 hours if you have a touchtone phone. **203-762-8677.** 6-81

★ ★ ★

Comp-Used

All used products over $100. Buy/sell through nationwide listing service. **NO CHARGE** for buying direct from owner. **NO RISK** for sellers - 6% commission when successful. Open 24 hours if you have a touchtone phone. **203-762-8677.** 6-82

.. For an offer you can't refuse ...
GODFATHER'S used computer SYNDICATE

$$$$ I BUY, Sell, & Trade IBM PC's. **Godfather's Used Computer Syndicate,** PO Box 3037, 1154 W. SR 436, Forest City, FL 32714. **305-774-1111.** 8-90.

.. For an offer you can't refuse ...
GODFATHER'S used computer SYNDICATE

$$$$ I Buy, Sell, & Trade IBM PC's. **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**

Shareware Authors

Let SMUG distribute your shareware. New national library. Get in on Ground **PC-SMUG,** Hanover, Asheville, NC 28806-4158. 9-81

Wanted IBM PC-jr. Computers, parts and accessories. We buy closeouts etc. Call or write with list **Computer Reset,** PO Box 461782, Garland, TX 75046. **214-276-8072.** 9-81

Wanted IBM PC-jr. Computers, parts and accessories. We buy closeouts etc. Call or write with list **Computer Reset,** PO Box 461782, Garland, TX 75046. **214-276-8072.** 9-83

★ ★ ★

Wanted To Buy: IBM PC, XT, AT. We will give you a fair price for your equipment. Call **PC Rent, 919-884-4067.** 9-81

★ ★ ★

Wanted To Buy: IBM PC, XT, AT. We will give you a fair price for your equipment. Call **PC Rent. 919-884-4067.** 9-81

(115B) IBM SOFTWARE PERIPHERAL

1000's of FREE IBM SOFTWARE programs available from Public Domain Users Group. Over 8500 members worldwide. Over 80 computer formats. For information send large SASE to: **PUBLIC DOMAIN USERS GROUP,** Box 1442-C1, Orangepark, FL 32067. 8-81

128KB FOR PC JR at $25.00

Already have an IBM 128KB memory expansion attachment? If yes, add another 16 RAM modules inside to make it 256KB for less than $25.00. Instruction on diskette for $15.00. Send check or money order to **MINH NG,** PO Box 1917, Boca Raton, FL 33429. 9-82

★ ★ ★

$3.00 IBM/PC/Jr SOFTWARE

Public Domain/shareware. Send $15 for 5 disk assortment or SASE for list. **T. Gillette,** Box 145, S. Sioux City, NE 68776.

$49

If you have been wanting to try "user Supported" software, NOW is the time! For $49 you will have A Word Processor, Computer Tutorial, DataBase Manager, Communication, Trivia Game, An 8 Function Desk Assistant Utility, Label Maker, Keyboard Macro Maker, AND 10 useful utilities. + Premium Quality 100% guaranteed Blank disks, disk cases. ALSO, A helpful autoexec and Installation program to make getting around your hard disk much easier + documentation & catalog. 20 Great programs for your IBM PC/XT or 100% compatable.
.....Also Available .....
Premium Quality ACCU+DATA DSDD Blank Disks, Soft Sector, Hubrings, Guaranteed 100% Error Free. With Sleeves, Labels, Write Protects. $17.50 per 25

COMPUTER BARGAINS WHOLESALE & RETAIL!

Computer Products & Peripherals Unlimited

Great Bargains Since 1975

Off-Lease, Excess, Pre-Owned and New

617/372-8637

MINIMUM ORDER $50.00

Prices Do Not Include Shipping & Handling

Master Card & Visa Accepted • Sorry No Collect Calls

WAREHOUSE: 18 Granite St., Haverhill, Mass. 01830

MAIL ORDERS: Box 204, Newton, New Hampshire 03858

TIM JENNINGS "MOE" CHAPUT

WE HAVE THOUSANDS OF ITEMS IN STOCK – IF YOU DON'T SEE WHAT YOU WANT – **CALL**

ALL ADVERTISED ITEMS SUBJECT TO SALES VOLUME & AVAILABILITY

UNIVERSAL "SMART" PRINT BUFFER – NEW! $249.

80 MB 8" WINCHESTERS!
Built by United Peripherals Limited (somehow CDC-related) Lark interface, schematic included.
~~$249.~~ Look Save 50.00 **$199.**

IBM PC & Clone Users! Hard Disk Controller for IBM PC
- Brand New & Never Used
- Includes Manual w/Data
- Use With 5 to 40 Mb.
- Ready to Use

Only $189.00 QTY'S AVAIL.

14" PRIAM DRIVES
51450-10, 158Mb ..... $1300.
6650-10, 68Mb ..... $900.

BUY 2 GET 1 FREE

DEX 4100 Facsimile (FAX) Machines
Transmits & Receives Photos & Documents
Separate Inputs
USE AS A COPIER TOO
$149.

CDC 9427-H "HAWK Cartridge" Disk Drives
$395.

Qume "Sprint-3" Widetrack Daisy Printers
New and used, quantity limited FROM $450.

8" "Winchesters"
5, 10, 20, 40 Meg
Shugart SA-1000 I/O Compatible
Tested, operational . . . less P.S. & Case
USED & NEW

Quantum 2040 40 Mb, Unused, ...	$1395. – Used	$795.
Quantum 2020 40 Mb, Unused, ...	695. – Used	$495.
Shugart SA-1004, 10 Mb	FROM	99.
Shugart SA-1002, 5 Mb, untested	FROM	59.
5¼" "Wini" Tandon, Seagate & Quantum 5-40 Mb	FROM	75.

TYPEWRITER/PRINTER PARALLEL TTL INPUT I/O "SELECTRIC"*

$129.00 Built-in Driver/Decoder Circuitry (TTL Level)

Centronics I/O For "Selectric" Typewriter/Printer Parts List, Schematics & Data $25.00

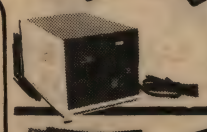
*Req. IBM Corp. T.M.

UNUSED MONITORS TTL SEPARATE SYNC
NEW... in original cartons

9"	Panasonic W Extra P.S.	$29.
12"	Panasonic	39.
15"	Panasonic W Extra P.S.	59.

19" Color Monitors for CAD CAM
Mitsubishi $325. *Ikegami* $350.

MITSUBISHI C3919 (-LP) 4000 chars, 15.5 – 23.5KHZ Hor. 40 – 70HZ Vert 50HZ – 25MHZ BW.
MITSUBISHI C6912 (-LP) 6000 chars, 28 – 35KHZ Hor. 40 – 70HZ Vert 50HZ – 40MHZ BW.
IKEGAMI CDA203H (-LP) 1024 x 1024, 32.4KHZ Hor. 54HZ Vert Better than 40MHZ BW.
Brand New IKEGAMI 14" Color Monitor, same spec as CDA 203 except 1024 x 512 (cases avail.) **$329**

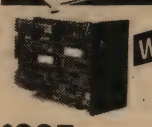


Unused Line Conditioners

120 VAC 2KVA	$895.
120 VAC 1KVA	$445.
120 VAC 7.5KVA	$1995.
120 VAC 500VA	$195.

BUY 2 GET 1 FREE

WINCHESTER DISK DRIVE SPECIALS



Quantum Q540 5¼"	Quantum 2040 8" (40Mb)
$895. Unused	$695. Used
	$695.

FREE MONITOR • FREE MONITOR with every $200. spent

Buy One... Get One FREE!

The G.E. "TERMINET 1200"
120 cps RS-232-C · 110, 300 & 1200 Baud (11, 30 & 120 cps) · 60 lines/minute · Compact, table-top configuration · Upper & lower case continuous band · Made in USA by General Electric.
Tested & operational.

RO 2 for **$249.**
KSR 2 for **$299.**

***Genuine* WANG OFFICE INFORMATION SYSTEMS (OIS)**
Refurbished & Like New. All Configurations
MULTI-USER DISTRIBUTED PROCESSING! OFF LEASE
Starting Prices $2900. Call For More Info!!!

DATAPRODUCTS DRUM PRINTERS
2200 SERIES
REDUCED!!

2230 300 lpm ..	$395.00
2260 600 lpm ...	995.00
2290 900 lpm	2295.00

from **$395.**

SHUGART Floppy Drives REDUCED!!
Used, whole, untested less P.S. & Case. RFE.

Tandon TM100-2, 5¼" DSDD .	Used $45.
CDC/MPI 9409, 5¼" DSDD ..	Used $45.
CDC/MPI 9404, 8" SSDD	Used $19.
CDC/MPI 9406, 8" DSDD	Used $39.
MPI Model 52 & 52S, 5¼" DSDD	Used $49.
Shugart SA-901 (Sim to SA-800/801) 8" SSDD .	Used $29.
Shugart SA-851, 8" DSDD	Used $69.
Shugart SA-800-2, 8" SSDD	Used T & O $99.

DIABLO 620 RS-232 Serial Printers .....
DIABLO 1610 Daisy Terminals .....
Only $295

DATA TECHNOLOGY CONTROLLER SA 1403D,
Supports 4 hard or floppy drives.
SA 1000, SA 850, 851, SA 800, 801 I/O (SASI Output)
$175.

CDC 9410-3 24 Meg "FINCH" Winchester
Hard Disk Drive
SA 1000 Style Interface
$249.

G.E. "TERMINET" 340 ASCII "BAND" LINE PRINTERS
High Speed Line Printer Ideal For Microcomputers
- Fully Formed Characters
- Nationwide Service from GE!
- Microcomputer Compatible!
- 132 Columns, 64 or 96 Char.

230 or 340 LPM
115 VAC, 60 HZ
$695. *TESTED & OPERATIONAL*

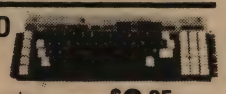
Refurbished	$ 895.
OEM Serial	595.
Centronics Parallel	1300.

USED, RS-232 ASCII TERMINALS
Whole, clean, tested, untested
"Smart" Terminal . . . *from* $59.00

"Micro" Power Supplies
- Lightweight "Switching" type
- Small, compact and powerful!
- Powers micros, term'ls, DD's & others

Model A		$19.		Model B
+ 5V @ 8A 12V @ 3A –12V @ .25A			+ 5V @ 6A – 5V @ .5A +12V @ .5A	

KEYTRONIX ASCII KEYBOARD
- Single voltage Supply (+5)
- 8 bits + strobe outputs



(Other codes avail.) Standard typewriter/TTY keyboard. Perfect for term'ls, "HAM" RADIO & Others. Some with ten key pad.
Brand New **$9.95 ea.**
(Lot Qty's Avail.)

Buy 2 at Reg. Price Get 1 FREE

TEKTRONIX 4012, Like New Tested, Operat . . . Buy 2 at $595 ea. Get 1 FREE.
TEKTRONIX 4112, Unused in Orig. Carton . . . Buy 2 at $1795 ea. Tested, Operat Get 1 FREE.

SOME REAL BARGAINS – They're Worth A Call!

Burroughs R-2 Word Processor Systems, tested Oper'l, w/printer	$695.
Epson MX 80 Printer, Centronics I/O, Tested, oper'l	Used $149. New $179.
Epson MX 80-III FT Printer, W/Tractor & Platen, oper'l	Used $169. New $199.
DEC LA/LS Printers, untested, off lease	$200.
Kennedy Tape Streamers, Mod 6255, untested .	$250.
12" Composite input CRT, tested, oper'l . .	$19.
12" Ball Bros., TTL input, Unused . . . BUY 2 GET 1 FREE . .	$29.

Diablo's Highest Quality O.E.M. Daisy Printers

HYTYPE-II 1355WP
Uses Xerox Metal Wheels or Plastic Wheels
- Original OEM Interface (Diablo Interface)
- Requires ±15V @5A & 5VDC @ 5A
- Positional access to 1/120 "HOriz." 1/48 "Vertical"
- USED BY XEROX, WANG & OTHERS
- Heavy Duty Printwheel Motor and 15" Frame

$349. *Still the Best!*

These fabulous daisy printers feature 35-40 cps, 10 & 12 pitch as well as proportional space and plotter capabilities. Only a power supply and interface are required for full printer capability. Fully tested and operational, ready to configure for the interface of your choice. Platen and I/O data included.

Spare P.C. Board Set (6 P.C. Cards)	$295.00
Spare Printwheel carrier assembly	229.00
Serial & Parallel Interface for Above	295.00

COMPUTER BARGAINS WHOLESALE & RETAIL!

Off-Lease, Excess, Pre-Owned and New

Computer Products & Peripherals Unlimited

Great Bargains Since 1975

617/372-8637

MINIMUM ORDER $50.00

Prices Do Not Include Shipping & Handling

Master Card & Visa Accepted • Sorry No Collect Calls

WAREHOUSE: 18 Granite St., Haverhill, Mass. 01830

MAIL ORDERS: Box 204, Newton, New Hampshire 03858

TIM JENNINGS "MOE" CHAPUT

WE HAVE THOUSANDS OF ITEMS IN STOCK – IF YOU DON'T SEE WHAT YOU WANT – **CALL**

ALL ADVERTISED ITEMS SUBJECT TO SALES VOLUME & AVAILABILITY

UNIVERSAL "SMART" PRINT BUFFER – NEW! $249.

80 MB 8" WINCHESTERS!

Built by United Peripherals Limited (somehow CDC-related) Lark interface, schematic included.

~~$249.~~ Look Save 50.00 **$199.**

IBM PC & Clone Users! Hard Disk Controller for IBM PC

- Brand New & Never Used
- Ready to Use
- Includes Manual w/Data
- Use With 5 to 40 Mb.

Only $189.00 QTY'S AVAIL.

14" PRIAM DRIVES

51450-10, 158Mb ..... $1300.

6650-10, 68Mb ..... $900.

CDC 9427-H "HAWK Cartridge" Disk Drives **$395.**

BUY 2 GET 1 FREE

DEX 4100 Facsimile (FAX) Machines

Transmits & Receives Photos & Documents

Separate Inputs

USE AS A COPIER TOO **$149.**

Qume "Sprint-3" Widetrack Daisy Printers

New and used, quantity limited FROM $450.

8" "Winchesters"

5, 10, 20, 40 Meg

Shugart SA-1000 I/O Compatible

Tested, operational . . . less P.S. & Case

USED & NEW

Quantum 2040 40 Mb, Unused, ...	$1395. – Used	$795.
Quantum 2020 40 Mb, Unused, ...	695. – Used	$495.
Shugart SA-1004, 10 Mb	FROM	99.
Shugart SA-1002, 5 Mb, untested	FROM	59.
5¼" "Wini" Tandon, Seagate & Quantum 5-40 Mb	FROM	75.

TYPEWRITER/PRINTER PARALLEL TTL INPUT I/O "SELECTRIC"*

$129.00 Built-in Driver/Decoder Circuitry (TTL Level)

Centronics I/O For "Selectric" Typewriter/Printer Parts List, Schematics & Data $25.00

*Req. IBM Corp. T.M.

UNUSED MONITORS TTL SEPARATE SYNC

NEW... in original cartons

9"	Panasonic W Extra P.S.	$29.
12"	Panasonic	39.
15"	Panasonic W Extra P.S.	59.

19" Color Monitors for CAD CAM

Mitsubishi $325. *Ikegami* $350.

MITSUBISHI C3919 (-LP) 4000 chars, 15.5 – 23.5KHZ Hor. 40 – 70HZ Vert 50HZ – 25MHZ BW.

MITSUBISHI C6912 (-LP) 6000 chars, 28 – 35KHZ Hor. 40 – 70HZ Vert 50HZ – 40MHZ BW.

IKEGAMI CDA203H (-LP) 1024 x 1024, 32.4KHZ Hor. 54HZ Vert Better than 40MHZ BW.

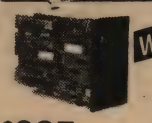
Brand New IKEGAMI 14" Color Monitor, same spec as CDA 203 except 1024 x 512 (cases avail.) **$329**

Unused Line Conditioners

120 VAC 2KVA	$895.
120 VAC 1KVA	$445.
120 VAC 7.5KVA	$1995.
120 VAC 500VA	$195.

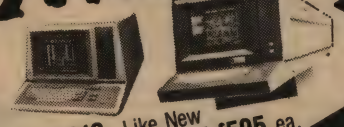
BUY 2 GET 1 FREE

WINCHESTER DISK DRIVE SPECIALS



Quantum Q540 5¼"	Quantum 2040 8" (40Mb)
$895. Unused	$695. Used
	$695.

Buy 2 at Reg. Price Get 1 FREE



TEKTRONIX 4012, Like New Tested, Operat . . . Buy 2 at $595 ea. Get 1 FREE.

TEKTRONIX 4112, Unused in Orig. Carton . . . Tested, Operat Buy 2 at $1795 ea. Get 1 FREE.

FREE MONITOR • FREE MONITOR with every $200. spent

Buy One... Get One FREE!

The G.E. "TERMINET 1200"

120 cps RS-232-C · 110, 300 & 1200 Baud (11, 30 & 120 cps) · 60 lines/minute · Compact, table-top configuration · Upper & lower case continuous band · Made in USA by General Electric.

Tested & operational.

RO 2 for **$249.**

KSR 2 for **$299.**

***Genuine* WANG OFFICE INFORMATION SYSTEMS (OIS)**

Refurbished & Like New. All Configurations

MULTI-USER DISTRIBUTED PROCESSING! OFF LEASE

Starting Prices $2900. Call For More Info!!!

DATAPRODUCTS DRUM PRINTERS

REDUCED!!

2200 SERIES

2230 300 lpm ..	$395.00
2260 600 lpm ...	995.00
2290 900 lpm	2295.00

from **$395.**

G.E. "TERMINET" 340 ASCII "BAND" LINE PRINTERS

High Speed Line Printer Ideal For Microcomputers

- Fully Formed Characters
- Microcomputer Compatible!
- Nationwide Service from GE!
- 132 Columns, 64 or 96 Char.

230 or 340 LPM

115 VAC, 60 HZ

$695. *TESTED & OPERATIONAL*

Refurbished	$ 895.
OEM Serial	595.
Centronics Parallel	1300.

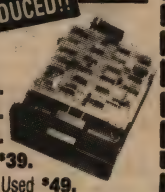
SOME REAL BARGAINS – They're Worth A Call!

Burroughs R-2 Word Processor Systems, tested Oper'l, w/printer	$695.
Epson MX 80 Printer, Centronics I/O, Tested, oper'l ..... Used $149. New	$179.
Epson MX 80-III FT Printer, W/Tractor & Platen, oper'l ..... Used $169. New	$199.
DEC LA/LS Printers, untested, off lease	$200.
Kennedy Tape Streamers, Mod 6255, untested .	$250.
12" Composite input CRT, tested, oper'l . .	$19.
12" Ball Bros., TTL input, Unused	$29.

BUY 2 GET 1 FREE

SHUGART Floppy Drives REDUCED!!

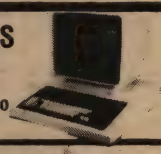
Used, whole, untested less P.S. & Case. RFE.



Tandon TM100-2, 5¼" DSDD .	Used $45.
CDC/MPI 9409, 5¼" DSDD ..	Used $45.
CDC/MPI 9404, 8" SSDD	Used $19.
CDC/MPI 9406, 8" DSDD	Used $39.
MPI Model 52 & 52S, 5¼" DSDD	Used $49.
Shugart SA-901 (Sim to SA-800/801) 8" SSDD .	Used $29.
Shugart SA-851, 8" DSDD	Used $69.
Shugart SA-800-2, 8" SSDD	Used T & O $99.

USED, RS-232 ASCII TERMINALS

Whole, clean, tested, untested "Smart" Terminal . . . *from* $59.00



DIABLO 620 RS-232 Serial Printers .....

DIABLO 1610 Daisy Terminals .....

Only $295

"Micro" Power Supplies

- Lightweight "Switching" type
- Small, compact and powerful!
- Powers micros, term'ls, DD's & others

Model A	$19.	Model B
+ 5V @ 8A 12V @ 3A –12V @ .25A		+ 5V @ 6A – 5V @ .5A +12V @ .5A

Diablo's Highest Quality O.E.M. Daisy Printers

HYTYPE-II 1355WP

$349.

Uses Xerox Metal Wheels or Plastic Wheels

- Original OEM Interface (Diablo Interface)
- Requires ±15V @5A & 5VDC @ 5A
- Positional access to 1/120 "HOriz." 1/48 "Vertical"
- USED BY XEROX, WANG & OTHERS
- Heavy Duty Printwheel Motor and 15" Frame

Still the Best!

These fabulous daisy printers feature 35-40 cps, 10 & 12 pitch as well as proportional space and plotter capabilities. Only a power supply and interface are required for full printer capability. Fully tested and operational, ready to configure for the interface of your choice. Platen and I/O data included.

Spare P.C. Board Set (6 P.C. Cards)	$295.00
Spare Printwheel carrier assembly	229.00
Serial & Parallel Interface for Above	295.00

DATA TECHNOLOGY CONTROLLER SA 1403D,

Supports 4 hard or floppy drives. SA 1000, SA 850, 851, SA 800, 801 I/O (SASI Output)

$175.

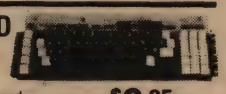
CDC 9410-3 24 Meg "FINCH" Winchester

Hard Disk Drive

SA 1000 Style Interface **$249.**

KEYTRONIX ASCII KEYBOARD

- Single voltage Supply (+5)
- 8 bits + strobe outputs



(Other codes avail.) Standard typewriter/TTY keyboard. Perfect for term'ls, "HAM" RADIO & Others. Some with ten key pad.

Brand New **$9.95** ea. (Lot Qty's Avail.)

pack...**VISA/MC orders** Call **800-821-5226 Ext. 442A** or send check or money order to: **EASYWARE**, PO Box 690, Spencer, MA 01562. (add $5 s/h).

ACCOUNTING UTILITY

A multi-purpose system which lists and summarizes dollar transactions by type of transaction.

Many different uses such as:
Company disbursements
Sales by Salesman
Income by Product
Expenses by Type
Any Dollars by Type

LISTER accepts transaction dollar amount, type and description using a pre-defined multi-line input screen. Data is summarized as entered and can be reviewed or printed by press one function key.

Data can be copied, consolidated, merged, deleted, summarized into new files. POP UP windows makes the system easy to learn and use.

FREE DEMO OFFER...try it...if you don't like it send it back, for a full refund. Requires IBM PC

$129.95 VISA/MC Welcome
CALL **1-800-824-7888 OP #882**

State Business Systems, Inc.
P.O. Box 848, Woodbridge, NJ 07095
201-634-7137
Dealers ask about our no risk plan

AMAZING BRIDGE-86 game plus Free Bonus! You're always delt the best hand when you play Bridge-86 with your computer. Features include one-key response, bidding, hands open or closed, replay of last 20 hands, computer play of defense, much more. Free Recreational Computing Newsletter! Specify MSDOS or TRS-80 version. $19.86. **RecMathSoftware,** 129 Carol Drive, Clarks Summit, PA 18411.

APO/FPO only. Pacific Software Library, Public Domain rent $1 or copied $2. Big selection, fast service. SASE for details and listing. 2043A Plumeria Blvd., APO SF, CA 96334. 10-83

A Powerful 300/1200/2400 Baud BBS! The famous Dial-Your-Match BBS now runs on any IBM compatible! Written entirely on 'C' for speed. Multiple message boards, multiple SYSOP-defined questionnaires, and comments on public messages. DYMNETWORK allows messages to be forwarded to remote BBS's avoiding toll calls! Order by Modem! **1-818-840-8066** (300 baud) or send SASE to: **BBS-PC**, PO Box 6055, Burbank, CA 91510. 10-88

AT LAST!!

The complete source for the absolutely newest versions of public domain and shareware programs. Gathered through diligent probing of the finest libraries and bulletin boards. no junk - just tested, quality material. Also, find out how to access "One of the country's great Bulletin Boards". Compare, the difference will be obvious. Write for information and catalog. It's free. **Steve Mills, 1556 King Albert Dr., Pittsburgh, PA 15237.** 10-83

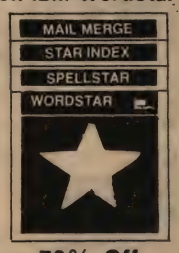
★ ★ ★

Amazing Software, Bargain Prices! Many programs unavailable elsewhere. Public Domain disks: only $2.95 copy fee each! Send for FREE list. Exclusive programs listed below only $5.95 each. ABC-RITE: Incredible word processor for those who want a cheap, easy way to type short documents. DATA BOSS2: Easy to learn/use data manager. Sort, qualify, print reports, etc. SPACE MISSION: Puts you at the helm of a starship. Can you accomplish your mission before it's too late? TYPER TEACHER: Learn to type using your PC. Send check or money order to: **Harvest Resources,** PO box 11513, Dept. CS, Phoenix, AZ 85061. Available in USA only. AZ residents add 6.7% sales tax. (For IBM PC and true compatibles. NO graphcis card needed).

★

Attention IBM FOOD LOVERS. The "COMPUTER CHEF IS HERE!!!" Computer cookbooks are now available for you on diskettes for your IBM & COMPATIBLES they are quick and easy to use. We have Appetizers, Candy, Casseroles, Chicken, Quickie Meals, Desserts, Mexican, Microwave, Singles/Doubles, and Seafood with many more available soon. Eash DISK sells for $7.95; and 3 selections $19.95; a set of any 10 $51.95. Please send check or money order to **Computer Chef, Crescent Branch,** PO Box 7451, Golden, CO 80403. Send SASE for additional information. Please allow 3 to 4 weeks for delivery. **303-642-0330.** 8-85

Attention IBM WordStar Users:



70% Off
For IBM PC and Compatibles

MailMerge - Merges WordStar files and creates personalized form letters; assembles mailing lists and labels. List Price $99 .....ONLY $29
For more details on this and other super bargains, look for **BCE's** red pages in this issue.

BCE 1-800-545-7447
Ask for Operator 28

★

★ ★

BCE GARAGE SALE!

Save even more on high quality printers! We've got some returned and used items we need to clear out of our warehouse. All of this equipment has been tested and is guaranteed to be in good working order upon arrival.
Be sure to see our RED FULL PAGE SECTION for other bargains.
NEC PR103A.....$119
Commodore 6400.....$319
Canon PJ1080A $169
Axiom DX2000 Sheet feeder $49
Axiom DX2500 Sheetfeeder $49

BCE 1-800-545-7447
Ask for Operator 28

★

★ ★

BCE GARAGE SALE!

Save even more on high quality monitors! We've got some returned and used items we need to clear out of our warehouse. All of this equipment has been tested and is guaranteed to be in good working order upon arrival.
Be sure to see our RED FULL PAGE SECTION for other bargains.
Amdek 310G TTL 12" Monitor (Made for Olivetti) $69
Magnavox TTL Monitor (Made for Leading Edge), amber and green screens available $65
Samsung amber composite monitors $30

BCE 1-800-545-7447
Ask for Operator 28

★

★ ★

BCE GARAGE SALE!

Save even more on high quality software! We've got some software we need to clear out of our warehouse. This software was originally bundled with one of the computers we sold and we've got a bunch left over. All is like brand new in sealed packages.
MicroPro Software -- WordStar, Spell Star, MailMerge, StarIndex, DataStar, ReportStar, CalcStar. For IBM PC and compatibles. Complete package only $59
Be sure to see our RED FULL PAGE SECTIN for other bargains.

BCE 1-800-545-7447
Ask for Operator 28

★ ★

BUSINESS

INVENTORY/INVOICING system Software. Totally tutorial, menu driven, compiled programs. Features include English language customizing, Lot/Batch and multi store capability. Flexible invoicing system. Full range of reports and daily summary. 2,000 items/floppy with multi-floppy capability. Up to 30,000 items on hard disk. Designed and programmed by DP professional with 32 years experience. Free information package. Evaluation floppy $5. **404-361-5958. Allen Associates,** 5806 Colt Ct., Ellenwood, GA 30049. 10-83

Buy Sell or trade used IBM software. Printed catalogue $2, catalogue on disk with two free programs $5. **Software Trading Club,** PO Box 1007, St. Francisville, LA 70775.10-82

CADIT SIMIT

CREATE DIGITIAL schematics with predefined symbols (TTL/CMOS) or create your own symbols/objects with the line, circle, box and text commands. Build your own library. Menu driven. CADIT for $20. Simulate digital circuits created by CADIT or a Netlist entered with the included text editor. Input and output waveforms are displayed. SIMIT for $20. **JB — Software,** PO Box 36299, Denver, CO 80236. 9-82

CG boards from IBM, STB, Quadram. Some w/PRT/CLK, 5 ROM $75; Also Bob's and multifunctional Irma APL ROMs $10. Other items. **214-223-1585** evenings. 8-81

★ ★ ★

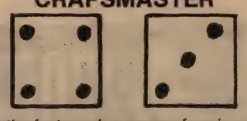
CHEAP BUSINESS SOFTWARE TO USE AND SELL IBM, Compatibles and Commodores. See our classified under Commodore Software. **ACCENT SERVICES.** 8-81

CHEAP SOFTWARE FOR IBM PC/MS-DOS/PCJr. Topnotch business, educational, games, and utilities diskettes. Send SASE for our free catalog or send $4 for detail directory diskette to: **Morning Star-Industry, PO Box 3095, Ann Arbor, MI 48106.** 6-82

CLONE COMPONENTS CHEAP. **B Systems,** 3228 S. Blvd. #171, Edmond, OJ 73013. 405-341-7437. 9-84

★ ★ ★

CRAPSMASTER



Learn the fast-moving game of casino craps without risking money. Realistic and colorful game includes color display of game table and chip stack. Allows all common bets, including pass, don't pass, come, don't come, place, odds, hardway, proposition, etc. Watch your chip stack decrease as bets are placed and the chips move to the table. Watch your stack grow as you get into a hot streak! Complete manual includes house advantages and discussion of betting strategy. For IBM PC/XT/AT/PCjr or compatibles with color graphics. $40 check or MO, pp. **HITECH MANAGEMENT CORP.,** PO Box 2121, Boca Raton, FL 33427. **305-392-3678.** 10-83

C TOOLS for Professionals. **B Systems,** 3228 S. Blvd. #171, Edmond, OK 73013. 405-341-7437. 9-84

★ ★ ★

Cheapware Top quality PC software collection: artificial intelligence, databases, games, graphics, learning, PASCAL SOURCE library, utilities, word processing and more. **25** DS/DD disks, the best of shareware, **only $49,** free shipping. Send $3 for disk catalog, 15 day money back guarantee, personal checks welcome. **Czako Klara,** 309 SW 16th Ave. #203, Gainesville, Fl 32601.

Compaq DeskPro for Sale 640k, 30MBHardDisk TBackUp Amber monitor Hayes1200 Modem Epson-FX100 Printer $5500 or best offer. **415-522-4198.** 9-81

Complete Integrated accounting software. Very comprehensive, yet easy to learn and use. menu driven with help screens throughout, 6 modules $350. **818-967-0661**

Computereyes $205; Star SG-10 $254; Modem with software $64.97; **Prices Include Shipping.** To order send payment or call. PA residents add 6% Sales Tax. VISA/Mastercard accepted. **Seneca Software,** 1104 Seneca Drive, RD #2, Harmony, PA 16037 **412-452-8418.**

★ ★ ★

Cross-Assemblers, CP/MS-DOS 2+. Easy to use, these assemblers are full Motorola compatable, and full of advanced features. Programmer amenities include, up to 30 input files, symbol table carry through between assemblies, and either MOTOROLA or INTEL format object code, among others. Currently supported processors: MC6800/2/8, H63/M6801/3, MC6804, MC6805, MC6809 and MC68HC11. $49.95 each 3/$125; 6/$210 Order NOW and receive as a bonus Intel and Motorola loaders, and EPROM programmer utilities. **Cross-Soft,** 102 Rector Ave., Suite 100-A, Manor, TX 78653. **512-272-4511** Sunday noon through Friday noon. 8-81

BLACKJACK

DELPHI BLACKJACK will allow you to play blackjack by the typical rules and protocol of casinos in the four major gaming regions of Las Vegas, Reno, Lake Tahoe and Atlantic City. The rules (which include double down, split, surrender, insurance, etc.) are also user selectable (in addition to the table limits, number of decks, player bank, etc.) to represent casinos with unique gaming rules.

DELPHI POKER is representative of the five card draw version of poker used in the popular casino poker machines. It will allow you to play by the normal rules of five card draw poker and will payoff according to the hand obtained.

* * * * * * *

Both programs freature brilliant window and card displays which will support monochrome and color monitors. They're ideal programs for practicing your gambling skills or for just great entertainment.

Requirements: 128K memory, DOS 2.0 or higher, one DSDD disk drive. NO graphics card required.

Price: $16.95 each (CA residents add 6% state sales tax - $17.97)

DELPHI DEVELOPMENT SYSTEMS
P.O. Box 6099
Santa Barbara, CA 93160
(805) 964-1090

★ ★ ★

DIRT CHEAP SOFTWARE Topnotch IBM PC, MD-DOS, and PC Jr. public domain and freeware programs for $4.95 per disk. Send for FREE CATALOG. **PD+**, 33495 Del Obispo, Suite 160 D, Dana Point, CA 92629. 8-82

DO YOU USE TURBO PASCAL? YOU NEED TRBOGRID! This Turbo Pascal Utility produces grids and boxes to be used in Turbo programs. Features: Colors, single/double line graphics, windows, menus, instructions. Very easy to use. Send $6.95 (check or money order) to: **Mike Calhoun,** PO Box 12941, Oklahoma City, OK 73157-2941.9-82

★ ★ ★

DR. HAPPYHOUR'S STRIPMAN

AN ADULT GAME FOR TWO OR MORE FRIENDLY ADULTS

Add $7 for Dr. Happyhour's Adult Biorhythms $32.95 pp. MC/V/Choice/CK/MO. **Friendly User's,** Dept. B, PO Box 1112, Salem, VA 24153. 7-80

★ ★ ★

Discount Prices! IBM compatible software .....$3.50 per disk. MBG on all orders. Write today for free brochure. **Micro-Applications, Inc.,** 915 E. Sheridan Ave., Des Moines, IA 50316.10-82

Engineering Mathematics: integrations, curve fittings, differential equations, linear system, eigenvalues, splines, simplex algorithm, polynomial roots. IBMPC disk (Basic) $16. **Alan Chung,** 417 North Curtis #B, Alhambra, CA 91801. 10-83

"FOR DEALER/OEM ONLY! A leading MFG/import co. supplies full line of IBM XT/AT compatible items. **IT IS ABSOLUTELY A STEAL!** Write: **Linex Systems Company,** 5 Chenile St., Irvine, CA 92714. **Tel: 714-786-3899. TLX:510-601-4701.** 7-83

FORTRAN SCIENTIFIC LIBRARY

FORTRAN Scientific Library contains over Sixty source code files of Math & Statistical subroutines that have matching **OBJ** files for use in your programs. Complete Documentation & References. Don't waste time researching; Use Source Code from our Library to improve your programs. Send $3 **CASH** for 20 page **CATALOG** or **SSAE** for price list. **CyberToolWorks, Box 4143, Huntsville, AL 35815.** 8-82

★ ★ ★

FORTUNE WHEEL! Now play the popular "Wheel of Fortune" television game show at home on your IBM or compatible PC! From 1 to 3 players can enjoy the challenge, excitement and fun of FORTUNE WHEEL. This reasonably-priced, easy-to-use, fast-paced game features realistic graphics, color (or monochrome) displays, sound effects, and operates much like the popular television game show. Spin the FORTUNE WHEEL for an amount, score if letters you enter are in the puzzle, win a round if you solve the puzzle, play 3 rounds plus a bonus round if your score is highest. FORTUNE WHEEL requires an IBM PC, PC Jr or Compatible Personal Computer, 128 KB Memory, 1 Diskette Drive (320 or 360KB), Color Graphics Adapter, 80 Column Color or monochrome Monitor. Software diskette contains user instructions and Color and Monochrome versions of the FORTUNE WHEEL program. $13.95 plus $2.05 P/H. **Precision Software Services,** 4618 Bexley Way, Stone Mountain, GA 30083. 10-82

FREE IBM PC Software: games, business, languages, utilities! Catalog of over 70 disks: $1. **MCSystems,** 6415 Shelterwood, Oakland, CA 94611. 10-83

FREE IBM PC SOFTWARE
Public Domain/User supported programs -- Financial, Educational, Utilities, Games, Word Processors, Data bases - For only a distribution charge. Free sample catalog upon request or send $5.00 for diskette which includes SDC's popular Name and Address program and a complete catalog of available diskettes. Write **SOFTWARE DISTRIBUTORS CLEARINGHOUSE,** Dept. 0203, 3707 Brangus, Georgetown, TX 78628. **MONEY BACK GUARANTEE.** 2-83

FREE PROGRAMS!! All IBMpc's, Apples, Commodores, TRS80's, Timexes/Adam/TI99 -4A.Send Stamps! **EZRAEZRA,** Box 5222-PISE, San Diego, CA 92105.

FREE SOFTWARE

NO JOKE not a come-on. 10 DS/DD disks $14.95, includes postage and handling. Say the word, and we will fill them with our best public domain and freeware programs. Volumes 2 and 3 available now. SASE for more information. **A.M. Baker,** 7907 Prairie Way, Sacramento, CA 95823. 10-84

Fancy-Font Laserprinter Typesetting program by Sotcraft with 5 additional Laserfont disks. 1 month old with all manuals and documentation. $130., **M. Rossel,** 45 Susan Ln., Buffalo, NY 14220. Call **716-827-0040.**

★ ★ ★

Form Magic - Version 2.0. Advanced word processor for pre-printed forms. Menus, automatic justification and decimal insertion, calculator features, protected/input required fields, all colors available, transfer data between forms, printer interface for

precise alignment, 30 page manual and more. $25 pp. 30 Day Trial. **MicroDesigns,** 2954 Orlando, Oklahoma City, OK 73120.

GAMES FOR IBM!

Outstanding selection of arcade, adventure, and educational games for only $4 per disk. Send SASE for catalog. **The PC Arcade,** 276 Morehouse Rd., Dept. C, Easton, CT 06612. 10-84

GAMES, GAMES, GAMES

50+ ENTERTAINMENT programs on 5 DS/DD disks. Arcade, board, adventure, music, stories, etc. Give the kids and/or yourself a real treat. $25.00 for all. **ALT/CTRL Software,** 686 Longbrook Avenue, Stratford, CT 06497. 6-82

GENERIC PC-DOS

RUN PC-DOS on any 8086 hardware. $15 for disk with article, source code. SASE for newsletter. Assembly language programming required. **Fred Greeb, LogiCom Inc.,** PO Box 27465, Lakewood, CO 80227. **303-986-6651.** 9-82

★ ★ ★

GOLF HANDICAPPER

Compute, store, update USGA handicaps, print handicap cards, list players alphabetically or rankordered by handicap, assign random foursomes, plus much more. 100 player capacity. Ideal for groups, leagues. $49.95 PP. CK/MO. MBG. **Personal Computer Products,** 11200 Lockwood Drive, Suite 307, Silver Spring, MD 20901. 2-83

★ ★ ★

GOLFMASTER

Our tough 18-hole course will challenge your golf knowledge and skills. You control swing dynamics, direction, club selection. Colorful graphics include blue lakes, green fairways, sand, trees, rough, out-of-bounds. Separate screens for full shots, chipping, and putting. Driving range and putting/chipping greens for practice. Adjustable wind strength; watch your shots curve in the wind. Improve your golf strategy, play conservatively or agressively. Shooting par is a real challenge! for IBM/PC/XT/AT/PCjr or compatibles with color graphics. $35 check or MO, pp. **HITECH MANAGEMENT CORP.,** PO Box 2121, Boca Raton, FL 33427. **305-392-3678.** 10-83

★ ★ ★

GREAT SOFTWARE, CHEAP PRICES. Only $4.95 per disk for the best IBM Freeware available. Invest a stamp. Send for our free catalog. **Public Domain,** 33495 Del Obispo, Suite 160E, Dana Point, CA 92629. 8-81

GREAT SOFTWARE, CHEAP PRICES!

Only $4.95 per disk for absolutely smashing User Supported & Public Domain programs. Check these features: (1) No copy protection on any disk. (2) Super fast delivery of orders. (3) Only the best programs offered--no junk. (4) **Money-back guarantee.** You can't lose! Here is a small sampling from our **FREE CATALOG:** PC-Write, PC-Outline, TuboSpell, PC-Desk, Poster/Banner, PC-Deskmates, File Express, PC-Calc, PC-File, Zork Master, Spacewar, Personal Finance Manager, Commercial Unprotect, PC-General Ledger, Fansi-Console, Cheap Assembler, Brain Booster, Chess, Galaxy Trek, plus lots of utilities, data bases, educational programs, games, & lots more. IBM PC, PC Jr., or compatibles. Send for FREE CATALOG. **PD,** 33495 Del Obispo, Suite 160A, Dana Point, CA 92629. 7-83

GREYHOUND RACE, ANALYSIS, PREDICITION, AND ENTRY SYSTEM (GRAPES). From Race and Result entry through multi-factor user controlled prediction, the best TRIFECTA tool available. Has successfully predicted 60% of Trifectas. Can be tuned for quinella, perfecta, or trifecta boxing. Requires 128K IBM/PC (DOS 2.x) DS/DD diskettes, Color or Monochrome monitor, and matrix printer. To order send $195.00 to **Brick Predicts,** 1962 Carthage Road, Tucker, Georgia 30084. 9-85

★

HOLY BIBLE SOFTWARE

PC-BIBLE. Do your own bible research. Finds words or phrases. Lists all references with complete text. Counts all occurences. Sends to disk, printer, monitor. Entire KJV bible. For IBM PC and compatibles. Other computers soon. For a limited time powerful word processor included free (organize and edit your findings). Just $79.95. Order from: **Computer House,** 12617 Bluhill Road, Wheaton, MD 20906. 9-81

HOME RECORD KEEPING SOFTWARE

★ ★ ★

REQUIRES IBM PC (or compatible), 128K memory, 2 diskette drives. Financial records may be kept using either the single or double entry bookkeeping method. Reports include balance sheet, income statement, transactions list with selection of all transactions or only tax related transactions, outstanding check list, and load amortization schedules. The home inventory module allows tracking of household items by Room ID. The home inventory report may be in Room ID order, purchase date order, or record number order. All output may be produced and displayed on either the video monitor or hard copy printer. Send $100 to: **Boardwalk Enterprises,** 715 Boardwalk, Texarkana, TX 75501. 9-81

IBM Color monitors for PC-jr or convertable like new $249; Adapter cable for connecting standard RGB monitor to PC-jr or convertable $15. **Computer Reset,** PO Box 461782, Garland, TX 75046. **214-276-8072.**

IBM-PC 9-TRACK TAPE DRIVES

Exchange data with minis and mainframes. Industry standard 800 BPI, 9-track tape drives for the IBM-PC, XT, AT. $1200 to $2100. Write or call for 8 page brochure. **Electrovalue Industrial Inc.,** Box 376-CBS, Morris Plains, NJ 07950. **201-267-1117.**10-84

IBM-PC GAMES

10 different DS/DD disks loaded with over 100 entertainment programs. $9.95 per disk, 3 for $18, 5/$25 or $40 for all 10. SASE for list. **Alt/Ctrl Software,** 686 Longbrook Ave., Stratford, CT 06497. 10-86

IBM® PC/PCXT and compatibles diagnostic software. New unopened with manuals. Only $15 including shipping. A must for finding hardware problems. **Hector Martinez,** 51 SW 69 Avenue, Miami, FL 33144-2809.10-82

★ ★ ★

IBM PUBLIC DOMAIN $2.25 per diskette. For 3-diskette catalog send $5 or order directly PC-SIG 1-450, PC BLUE 1-187. **Harnessed Computer Corporation,** PO Box 63-5095, Margate, FL 33063. 9-82

IBM PUBLIC DOMAIN

SEND FOR FREE LIST. We have games, databases, spreadsheets, graphics, inventory control, budget programs, and lost more for business, or home. Only $3.00 a disk. Also blank disks 5¼ DSDD in packs of $0 $.99 per disk. **JDX Disk Copy Service,** PO Box 1561, Corona, CA 91718. 8-81

★ ★ ★

IBM PUBLIC DOMAIN software $3 a disk, $1 for catalog or $3 for catalog and demo disk. Free disk when you order. Brandname software available. **PC-XT** COMPATIBLE, 256K B RAM, 2 half height DSDD with controller card, monitor with monochrome graphics card with parallel port. 6 month warranty **$1400.** 20 mB hard disks also available. When asking for more information please specify what other peripherals you are interested in. For more info please write: **B&L CONSULTANTS AND SALES,** Box 461, Wabash, IN 46992. PH. **#219-563-7650.** Now accepting VISA and M/C. 9-81

IBM Public Domain software. Low as $1.50 per disk. Send SASE for catalog. **R.A. Higgins,** 307 Park, Clinton, TN 37716. 10-84

IBM SOFTWARE $4.50

490 disks $4.50 each
Directory disks - Explains all files on our disks $9
5 Volume sample pack - PC-WRITE, PC-FILE, PC-CALC, Games and Utilities $22.50
1-2-3 Worksheets (8 disks) $36
Turbo Pascal Routines (8 disks) $36
Unprotect popular software (4 disks) $18
Financial applications (4 disks) $18
Programming languages (6 disks) $27
"c" Routines (6 disks) $27
Arcade quality games (4 disks) $18
Utilities (4 disks) $18
Printed catalog - summary of all our disks $1 (free with order). Please add $4 shipping and handling on disk orders. Send check, money order (US FUNDS), Master Card or Visa to **The Computer Room,** PO Box 1596, Dept. 103, Gordonsville, VA 22942. **703-832-3341.** 8-82

IBM SOFTWARE CHEAP. Not Freeware/ Domain. Free catalog. **PC+,** PO Box 504, Sicklerville, NJ 08081. 9-90

★ ★ ★

IBM SOFTWARE

BUSINESS PACKAGE: PC-Writ, PC-File, PC-Disk, PC-check, Mail List, Catalog, Label Printer, Commando, Assorted Utilities $20
PERSONAL PACKAGE: Inventory, Check Book, File, Data Base, Word Processor, Bartender, Label Maker, Mail List, Spread Sheet, Utilities, Misc. $20
MISC. PACKAGE: Real Estate, Stock Mkt., Memory Resident, Numerology, Horoscopes, Biorhythym, Hurricane Tracker, PCSWP21 Utility, Think Tank Clone, Communications, & other misc. utilities not included above $20
GAME PACKAGE: Football, Pool, Poker, Blackjack, Slot Machines, Pinball, DND, Backtalk, Space, Trucks, Maze, Checkers, Monopoly, etc., etc. $20
Buy 2 get 3rd ½ price, buy 3 get 4th free! The above prices include postage (TX res. add tax). Check, Money Order, Visa and Master Charge.

C E I
13802 Little York, Houston, Texas 77044
713-458-6888 8-5 M-F 8-12 Sat. 9-82

★

IBM SOFTWARE

$10/DISK
SOFTWARE FOR IBM & COMPATIBLES
Write For FREE Catalog
THE EVALUE-TECH GROUP
642 Park Street W.
Windsor, Ontario
Canada N9A-5V6
PLEASE SPECIFY IBM
1- (519)-255-9812
(FORMERLY SOFTCITY)
5-83

IBM SOFTWARE CHEAP. Not Freeware/Domain. Free catalog. **PC+**, Box 504, Sicklerville, NJ 08081. 6-82

★

IBM SOFTWARE $10/DISK

2,000 Top Titles in Wordprocessing, Spreadsheet, Database, Integrated, etc. Instant Access!

CALL TOLL FREE
1-800-663-8844

[604-732-7508 in Canada] We've got it! "Call NOW for FREE giant catalog."

Softsave

★ ★ ★

Introducing NEAT, a UNIX nroff workalike text formatting program which has formatting and font controls. Supports any printer with configuration file. Has text merge, multiple copies, selected page printing. PC/MS-DOS 2.1+ with documentation. $15 single user, $50 site license. No CODs. **S.E. Margison,** 124 Sixth St., Downers Grove, IL 60515.

KJV Bible on disk, Old and New Testaments saved as ASCII files (over 5 megabytes) in 1,189 chapters. Utilities for reading/printing included, or use your word processor, $99. MC/Visa accepted. **Fax Plus, 1 POB 206, Derry, PA. 412-694-5750** (4-8 PM EST).10-83

LOAN AMORTIZATION SCHEDULE, FULL FEATURED, BANK APPROVED FORMAT. Runs on IBM Jr., PC, XT, AT, and all compatibles. $19.50 including shipping. SASE for sample printout and details. **Computer Services,** 5550 W State St., Homosassa, FL 32646. 9-82

PRO FOOTBALL ANALYST

BEAT THE POINT SPREAD!

GUARANTEED!

Handicap NFL/USFL games easily and profitably with you computer! Only 5 minutes/week and your local newspaper is needed to uncover **hidden** overlays in the betting line. A winning season GUARANTEED or your MONEY BACK! **$34.95 (+ $4.55 sh)** IBM, compatibles, C64/128, TI99/4A. Order **1-800-341-1950 Ext. 77.** By Mail: **GE RIDGE SERVICES,** 170 Broadway #201CS, New York, NY 10038. Write for free catalog. 9-82

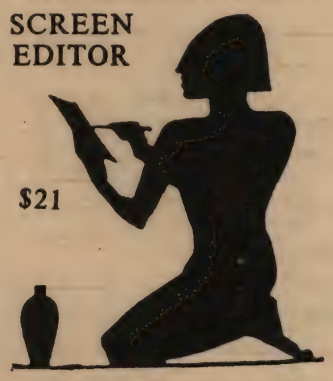
COLUMBIA OWNER'S GROUP!!!!

Sponsored by the New Columbia Data Products, Inc. Now being formed. Newsletter, MS-DOS 3.2, EGA Support, latest ROMS, Upgrades, & Service Manuals. A must for Columbia owners. Discounts for all charter members. Call or write for info. **C.O.G.,** PO 2584, Altamonte Springs, FL 32714. **305-774-1111.**

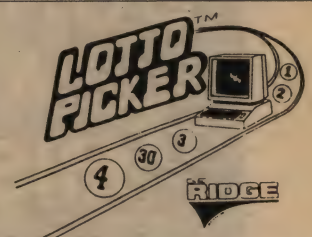
vanilla™

DISKETTE COOKBOOK SERIES. VANILLA publishes 25 popular cookbooks transcribed to disk. Search, scale, print recipes from 1000's available. Harddisk search supported. Create your own cookbooks, too. No User Manual needed. jr/PC/XT/AR compatible. Software $40; most cookbooks $12. DEMO $3. Free Catalogue. **Vanilla Software,** 3345-CS Lakeshore, Oakland, CA 94610. **415-482-4756.** 8-82

Dick, Jane, & Jip will never be the same once they C:DOS:RUN. Get this hilarious T-shirt for only $8.50. See display ad this issue for others. Add $1.50 ship/H (50¢ each add'l shirt). FL residents add 5% tax. Specify S-M-L-XL to: **TECH STYLES,** Dept. CS10, Box 1877, Winter Haven, FL 33882-1877.



Universal Full-screen Editorial full-featured edits any MSDOS file in any language, Hexadecimal and all characters in the extended ASCII character set. Call our technical staff and find out how to solve your most stubborn problems. Key macros, search and replace. Many other features. Forty page technical manual $21 postage paid to: **DISC,** Suite 614, 1725 K Street, NW Washington, DC 20006. **202-785-8585.10-84**



MILLION $$ JACKPOTS! LOTTO! PICK-4! Your **IBM, C64,** or **TI99/4A** can unlock the winning combinations for you! Every U.S. and Canadian game included! Expandable! **$29.95. ORDER 1-800-341-1950 Ext. 77.** By Mail: **GE RIDGE SERVICES,** 170 Broadway, #201-CS, New York, NY 10038. Write for Free Catalog. 8-81.

The Probability Lottery program. Select numbers weighted towards the most or least picked or random. Pick 3&4 too. See reviews in Rainbow Magazine (October 85) or *Computer Shopper Magazine* (January 86). versions for MS-DOS (IBM, AT & T, TANDY 1000 etc) and CP/M Computers on disk, Only $29.95. **Gary Olander,** 322 Haymarket Pl, Gahanna, Ohio 43230. 10-86

TRIFLES!
$19.95!
TRIVIA

Versatile Trivia - Can be played similar to popular game show, "Wheel of ?????", or use gigantic trivia file included. Great for educators!! Included is motor to expand or create your own game. IBM PC or compatible. list $39.95 - SALE $19.95 + $1.00 postage. **MCS,** Box 1917, Kettering, OH 45429. 4-81

★ ★ ★

LOW COST software for your IBM PC and compatibles:

Mailing label system prints labels in zip code order, customer lists can be printed in alphabetical order or customer number order. Customer numbers can be entered in any order. Additions, deletions, and editing of records are extremely easy. $9.95.

After the fact payroll System keeps up with your payroll data "After" the checks have been completed. Allows all keyed data to be reviewed before posting. Posting reports are generated for easy audits. System prints W2 and 941 information. $14.95.

Inventory control system tracks inventory in 3 locations. For each item the system will keep track of cost, price, location, date last used, adjustments, and much more. System prints stock status report, reorder report, item cost report, price report, and cross-reference report. $9.95.

Video tape data base system organizes your video collection. For each tape you can enter: Tape number, name, format, speed, rating, comments, plus information on up to 10 programs recorded on the tape. System also prints labels for your tapes, and a list of all your tapes. $9.95.

Customized Software, Inc., POB 6992, Tyler, TX 75711. 10-83

MCBS ACCOUNTING

Integrated or standalone General Ledger, Accounts payable, Accounts Receivable, Payroll and Order Entry with Inventory. manuals on disk. $6 per module. All five modules $25. Add $3 shipping. **Dollarware,** Box 17116-CS, Salt Lake City, Utah 84117. 7-80

MIDI SOFTWARE

For IBM and compatibles by Hybrid Arts, Syntech. Program your synthesizer! Casio CZ101 and 1000, MIDI cards, hardware, more. SASE to **Livewire,** Dept. CI, 90 Shrewsbury, Oceanport, NJ 07757. **201-870-3115.**

DON'T MAKE A $300 MISTAKE!

WHEN YOU CAN BUY IBM COMPATIBLE SOFTWARE FOR ONLY $6 A DISK

OVER 500 DISKS FULL OF PUBLIC DOMAIN AND USER SUPPORTED PROGRAMS

LONE STAR SOFTWARE

Recently a Customer Wrote . . .

". . . I'm SICK! Friday afternoon I bought a $300.00 data base manager from my local computer dealer. When I got home I found out my neighbor bought the same kind of program from you last week for six dollars. What's worse, I like your program better! Please send me your disk directory and the following disks . . ."

What can we say? Isn't it really about time you discovered that spending big bucks for all of those "glamorous-name" software products doesn't necessarily guarantee you anything but a thin pocketbook and a fancy copy protection scheme?

No . . . Computerland won't tell you about us or our great software. But why make a $300.00 mistake? Many of our $6.00 packages will actually do everything better and faster than the great "Starword-dplus-4.5.6", and you can keep the difference.

Here is just a sample of our library by category.

WORD PROCESSORS

PC-Write 2.6 (#78) A full featured word processor that is faster than Wordstar.
DICTIONARY (#378) Dictionary type spelling checker.
IV-ED (#415) Word processor - editor.
LETTERWRITER (#415) controls letter processing.
PC TYPE (#455) Jim Button's contribution to a full fledged word processor.

SCREEN EDITORS

FOIL EDIT (#347) Full screen editor. Top to bottom and left to right.

TEXT PROCESSING TOOLS

FOGFIND (#378) reverses writing complexity using the "Fog Index".
WORDSTAR AIDS (#379) collection of the most useful utilities for the Wordstar user.
PC OUTLINE (#414) Create and collapse and outline. Great for plans, essays, etc.

DATABASE PROGRAMS

PC FILE III (#5) most popular database program from Jim Button.
U-MIND (#133) Fast hashing makes this a dandy database. (Intelligent database)
NEWBASE (#233) Menu driven database for the beginner.
PC-DBMS (#383) A relational database management system that provides on-line help and screen editing functions.
ELSIE EXPERT SYSTEM (#398) Artificial intelligence shell to build a custom knowledge-base.
PDS*BASE (#396) Complete hierarchical data base system master/detail or mother/daughter type.
CREATOR (#339) create, report, and sort makes this a super database management system.

DATABASES

BOBCAT (#247) Small business database. Excellent!
MFIND (#311) Database of over 2000 movies that can be searched in any category, or you can add your own.

SPREADSHEETS

PC-CALC (#199) Fabulous 123 work-a-like from the author of PC-File.
PC-PAD (#406) Spreadsheet and address book program written in basic.

SPREADSHEET TEMPLATES

LOTUS 1-2-3 TEMPLATES AND MACROS (#140, 141, 165, 257, 289, 301-304, 406, 414) Why spend hours of writing your macros when these are ready made? Modify them yourself.
SYMPHONY WORKSHEETS (#305, 306)

FINANCIAL PROGRAMS

PC-CHECK MANAGER (#275) Keeps multiple checkbooks in balance.
TAX FILE DBS (#295) Tax record keeping system that saves you money on April 15.
SAGE TRADER (#242) Analyzes commodity trades. Don't "short" this one!
PORTSWORTH PACKAGE (#101) Evaluates your ever changing stock portfolios.
FINANCE (#164, 227) Determine present and compound values, interest rates, etc.
HOME FINANCE (#406) Lotus 1-2-3 Macros for real life applications.
PC-GENERAL LEDGER 1.2 (#237) An exceptional accounting system. Used by some CPA's.
TIME AND MONEY (#251) Financial record keeping and analist system.
LOAN AMORTIZATION (#399) For output to screen or printer. Lots of on-line help.
BASIK CHECKBOOK (#271) Keep track of checkbook and personal finances.
ACCU-TAX 1985 (#479) You can't buy a better "commercial" program.
MR. BILL (#469, 470) Prepare invoices, client report, audit trail, etc.
ANALYTIC CALC (#430-432) 3 disk set. Complete spreadsheet, database, graphics, word processor - fassst!

COMMUNICATIONS

QMODEM (#310) The best and fastest communications programs you can buy at any price, bar none!
PC-TALK (#16) The classic "Freeware" communication program.
PC-VT (#286) VT-100 Emulation.
SYSCOMM (#338) Menu driven system allowing unattended file transfer.
RBBS 12.2 (#212) Become a SYSOP and start a bulletin board.
FIDO NET (#333) Bulletin Board System. Perhaps the easiest to run.

MATH AND STATISTICS

EPISTAT 3.1 (#88) Statistical analysis of small to medium-signed data samples.

LANGUAGES

CHASM 2.13 (#10) Cheap assembler with tutorial.
XLISP 1.4 (#148) Lisp language interpreter.
MVP-FORTH (#31, 32) Two disk set of Mountain Valley Press Forth.
3 FORTHS (#352) To modify or expand your own forth language. MVPFORTH, FORTH-H and SEATTLE Computer's Forth.
PROLOG & UNIFORTH (#417) Complete with editor and documentation.
SNOCREST BASIC (#409, 410) two disk set. Real basic interpreter with manual. Can be used with a multi-user system.
ESIE (#398) Build and generate an expert system in a flash.
PASCAL COMPILER (#424) Written in Turbo Pascal.
P-BASIC (#381) BASICA work-a-like for clones, etc.

UTILITIES

DISKCAT 4.0 (#106) Catalog all your disk files in a hurry.
GINACO (#66) 54 polished routines written in basic for any beginner or experts. We love it!
ULTRA-UTILITIES 4.0 (#133, 245) Recover lost files, modify sectors, etc. Like Nortons.
SYSMENU (#250) Build a menu driven menu system. Excellent for hard disks.
LOAD-US (#284) Allows Lotus and Symphony to be used on a hard disk.
PC-DESKMATES (#405) Better than Sidekick and all of the rest of the memory resident desktop utilities.
ALIGN 1.6 (#217) Disk alignment tool.
TOP UTILITIES (#273) All of the most requested utilities on one disk.
NUMZAP (#284) Removes line numbers from BASIC programs.
HARD DISK UTILITIES (#478) A collection of the best in the library.
UNPROTECT (#414) Various routines to disconnect protection schemes.
PATCHES (#376) make back up copies of some of the most popular commercial programs with this collection.

PRINTER UTILITIES

SP 3.4 (#186, 275) Printer buffer that partitions your data so you can use your computer and print at the same time.
SIDEWAYS (#265, 411) Prints text sideways on an Epson printer.
SETPRTR (#79) Sets up Epson printer from a menu.
SLIDE (#244) produce medium resolution slides and overhead transparencies.
PRINTER UTILITIES (#411) Sorgasboard of utilities and tools.
EPSON PRINTER UTILITIES (#326) Spool, set up routines all designed for Epson codes.
BANNER (#386) make long banners with large letters. Includes MS-FORTRAN source codes.

EDUCATION

EQUATOR (#249) A teaching tool for math, science and finance.
PC-TUTORIAL (#403) A first course in computer usage covering various aspects of MS-DOS. Good!
PC-PROFESSOR (#105) Learn Basic the easy way. One of the best tutorials on BASIC.
PC-DOS HELP (#254) type "help" for the DOS command you forgot.
FLASH CARDS (#367-370) 4-disk set. Vocabulary builder, spelling teacher.
TOUCH-TYPE (#320) Advanced type tutor.

GAMES

TOP GAMES (#274) The most requested arcade type games.
ARCADE GAMES (#293) Another goodie bag of top Arcade games.
TRIVIA GAMES (#327-329) Lots of files and documentation for hours of fun. Will not work on PC JR.
PC JR GAMES (#354) Games that will work only on PC JR. Combat, dungeons and dragons, Global Thermonuclear War.
MISC. GAMES (#390) Good selection of educational, adventure, and arcade games.
BIG FOUR GAMES (#272) Texas most popular, STARGATE, ZAXXON, AIRTRAX, and DND

MUSIC

PC-MUSICIAN (#127) Compose music on your PC, save and play again.
PIANO MAN (#279) Play your PC keyboard like a piano.

APPLICATIONS

GENEALOGY ON DISPLAY 3.0 (#90)
GENEALOGY - FT 1.25 (#240) from Pine Cone software.
LABELMAKER (#146) Our favorite label file and maker. Menu driven.
PC-FLY "Fliteplan" 2.1 (#261) Pilots prepare and file your flight plans.
RECIPE 83 (#281) Recipe index for use with PC File III (#5)
FAMILY HISTORY (#361) Family history, ancestor and decendant charts. Sample programs.
FORM LETTERS (#388) LOTS of samples of the most commonly used business letters. Modify!
HAM RADIO (#436, 437) Electronic goodies, design antennas, great circle, etc.

GRAPHICS

PC-KEY DRAW (#344-345) A small CAD system. Lots of demonstration files.
PC-PICTURE GRAPHICS (#136) Drawing package allows you to zoom, color, and store pictures.
PC-GRAPH (#418) Allows user to create graphics from PC-File report files.
ORIGAMI (#408) Japanese art of paper folding. Graphics required.
DRAFTSMAN (#400) Easy to use presentation quality. Mouse or keys.

ORDER FORM

LONE STAR SOFTWARE, INC.
2100 Hwy. 360, Suite 1204
Grand Prairie, Texas 75050
214/647-1010

SHIP TO: _____

TOTAL #_____ x $6 = _____
DISK DIRECTORY (Explanation of all files & programs) x $6 = _____
OTHER _____ = _____
SUBTOTAL _____
TEXAS RESIDENTS ADD 6⅛% TAX = _____
SHIPPING & HANDLING = _____
(1 @ $1.00 and .50 for each additional disk)
TOTAL _____

☐ MASTERCARD ☐ VISA
CARD NO. _____
EXPIRATION DATE _____
SIGNATURE _____

PLEASE ENCLOSE CHECK WITH ORDER

CIRCLE DISK NUMBER DESIRED:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500

1986 Lone Star Software Inc

MS-DOS

LIBRARIES

Complete Selection of ASM, C FORTRAN, BASIC, and Pascal Source Code. DBase, 1-2-3, and other utilities. Music, Artifical Intelligence, **CAD**, Stocks/Commodities, **ARIMA** Forecasting, Fourier Cycles, All types of Games. Don't waste time and money; use Source Code from our Libraries to improve your programs. Send $3 **CASH**, for 24 page **CATALOG. CyberToolWorks, Box 4143, Huntsville, AL 35815** or call **205-880-2250.** 8-82

★ ★ ★

Mail U.S.A. - Powerful mailing list software. Menus, quick input, default entries, error and duplicate checking, indexing and miscellaneous fields, bulk/carrier route sort, review windows, group search (finds all records matching your criteria), prints any size labels up to four across, 2500 records per disk, color supported, and 50+ page manual. Interfacing form letter software included. $35 pp. 30 Day Trial. **MicroDesigns,** 2954 Orlando, Oklahoma City, OK 73120.

Must Sell! Color graphics boards, IBM $80, STB $60-$95, Quadram $70, others $45-$110, STB serial $35, APL character ROMS $10, (2) Sysgen SH-9001 $75, Davong I/F $35, (3) NEC printer I/F $75, AST PC-NET $60, (3) AST multifunction $80, Assorted STB, Quadram multifunction boards from $25, Smartcommll $55. Most are like new w/warranty. Tallgrass 3135, IBM-PC Portable w/640K 20Mb, ITT XTRA XP/XL computers, Cordata ATP8-Q-20. Call w/offer **214-223-1585** evenings best. 10-83

★ ★ ★

NEW! $24.00 * EstiBid, Estimating!! IBM PC, or Compatible Software System. Plumbing, Piping, Sheetmetal, Subs, Framers, Electricians etc. Data Base give you full ctrl of materials & labor. Sub-divides bid into systems. Full job ctl w/costing. Vary pricing & labor between systems! Turbo subassmblys. Ezy takeoff. Much more! *Fully functnl 20 program syst. As you like it, register for support & 4 maint progs. only $275 addtl. Satisfaction Guaranteed! Save $1000's! Share it with friends for 20% rebate! **Software Assoc. Labs,** Dept R112, 1747 Valencia, San Bernardino, CA 92404. 10-82

NEW COMPUTER OWNERS

Why waste time and money!! Our package of programs on 5 DS/DD disks for the IBM-PC includes word processing, spread sheet, date base, communications, arcade games, utilities. Some people never need another program. Documentation on disks. $25 for all. **ALT/TAB Software,** 686 Longbrook Ave., Stratford, CT 06497. 5-81

★ ★ ★

OPEN SYSTEMS Version 3.0 Accounting. Accounts Payable, $395. Resource Manager $125. Both like new and unused. Must Sell. **Bill Dorsey,** 878 Jackman Dr. #114, El Cajon, CA 92020. **619-589-8661.** 10-85

ORACOMM BBS software for sale. Includes user accounts, up/downloading, networking, multiple boards, 4K messges w/comments, and more. Try it at **818-509-9681** and call the **Multiuser Oracle** at 818-980-6743. 9-82

Only $9.95. 2 disk user supported small business accounting package. General Ledger, Accounts Receivable, Accounts Payable, Inventory, Payroll. **Crumrine & Associates, Inc.,** POB 475454, Garland, TX 75047. 9-81

PCJr Public Domain Programs. Games, utilities, etc. Send stamp for list. Sample disk (10 programs) $6. **Rahfield,** 1615 Deering, Cleveland, MS 38732. 8-81

PC SOFTWARE FREE

ABSOLUTELY FREE! Our best Public Domain Software for the IBM PC copied to your disks absolutely free when you purchase your disks from us! Lifetime guaranteed DS/DD disks. Ten for $12.75 or one hundred for $125. Add $1.75 per order for postage and handling. Ask for Software Package #10-A or #100-A. **Digi-Ware,** 14643 Muscatine, Houston, TX 77015. 9-82

PC SOFTWARE FREE

ABSOLUTELY FREE! Our Best Public Domain Software for the IBM-PC copied to your disks Absolutely Free when you purchase your disks from us! Lifetime Guaranteed DS/DD Disks, Ten for $12.75 or One Hundred for $125. Add $1.75 per order for postage and handling. If you want the free software ask for package #10-A or #100-A. **Digi-Ware,** 14643 Muscatine, Houston, TX 77015

PC TIMESASVER disk is packed with a collection of essential computer tools. There are too many tools to list however several examples are: SUPERDIRECTORY — lists disk directory in double column format, VIEW — is ten times better than DOS 'Type' command, HIDE & UNHIDE — for securing or unlocking files, KEYBOARDBUFFER — permits type ahead without waiting, DOSEDIT — speeds keyboard operations (rated A+), SUPERCURSOR — adds time and date to DOS prompt, COREVIEW — for viewing memory, SCROLL LOCK — starts/stops scrolling with single key, ...and many more. An electric desk program with pop-up timer, notepad, alarm and other functions is included free. A price/performance breakthrough $29.95. **Solas Products,** Box 665, Springhouse, PA 19477. Instructions included. 9-81

★ ★ ★

PEP! TRANSFER your data to PC/XT/Compatibles from any computer that runs a serial printer. $59. COD-Bank-Discover-American Express cards OK. **Competition Computer,** 414-672-4010. 9-82

PC USERS TAKE NOTES: BIG WONDER SMALL PRICE!!! 1300+ Public Domain Disks and 50+ Peripherals (include CADD, Data Acquisition, Local Networking) for IBM-PC, Apple, Macintosh,Commodore, & compatibles.. SASE for Free Catalog. (specify computer please). **Pan World International,** 422 Halsey Road, North Brunswick, NJ 08902. 3-85

★ ★ ★

PRINTER LIQUIDATION

VIVITAR Transtar Daisywheel Printers. Model 130, parallel or serial. Twenty CPS, original retail: $895, Sell for only $199. Same as Silver Reed EXP 550. Full warranty, immediate delivery. Call **Steve 1-800-752-5262.** MC/VISA accepted.

PRODUCTIVITY TOOLS. PC/MS-DOS Toolkit. Our Exclusive Two disk set is still only $22.95 ppd. **CYBERSOFT,** Drawer 5807, Columbus, GA 31906. 10-84

PUBLIC DOMAIN and User Supported Software. The best of the BEST! 50 disks crammed full of Spreadsheets, Wordprocessors, Mailing List Programs, Data Base Managers, Lotus Templates, Business Accounting Programs. Languages, Games, educational programs, utilities such as Custom keyboard definers, DOS Help, print spoolers, ramdisk software, undelete programs, file dumpers, etc. etc. The best collected from dozens of sources and put on 50 disks for your IBM PC, PCXT, AT or compatible. We've seperated the wheat from the chaff so you won't have to! All 50 disks postpaid to your door in the USA $205 ($10 additional outside USA). Just one program could be worth more than the price of the entire package! Also available for rental! Rent the entire package for 2 weeks for $75 postpaid to your door in the USA (add $10 for Canada, rental only in US and Canada). MC/VISA. Money orders receive fastest service, personal checks welcome, allow time to clear. SUPER SAMPLER DISK with complete info. $6.50 postpaid. Deluxe Word Processor $6.50. Both $12. **Blue Circle Group, Inc.,** Box 23502, Minneapolis, MN 55423. Phone **612-823-4111.**

PUZZLE SOLVERS
CROSSWORD or CRYPTOGRAMS
Use your MS-DOS computer to solve your newspaper's puzzles. Save them to solve again next year. (You won't remember). Cryptogram program is only $10 ($20 if you want the program listing) and is also available for CP/M (Apple CP/M Too). Includes 300 cryptograms. The Crossword program is $20 and also includes plenty of puzzles to solve. Two versions, color and monochrome are included. **PUZZLES,** 1404 Woodtone Drive, West Chester, PA 19382. **215-399-0963.** 7-83

Professional Sports Handicapping Software: Throughbred/Harness: $29.95/Enhanced $49.95: Greyhound: $29.95/Enhanced $49.95: Football $39.95: Plus $2 S&H. VISA/MC, Specify Computer. Information write: **The Softtech Group Inc.,** PO Box 582C, Keego Harbor, MI 48033. **313-851-4925.** 9-81.

★ ★ ★

Programers....get your Public Domain program to more users. add it to our catalog. Send a copy to: **Software,** 209 Third Ave., Newton-Square, PA 19073.

Public Domain IBM software $10 per Mbyte programs including disks. Write for free catalog. **Microman Computer,** PO Box 35643, King's Road Post Office, Hong Kong.

QUALITY IBM SOFTWARE

Data Bases, Spreadsheets, Word Processors, Utilities, Games and Productivity programs. Only **$4.00** per disk. No postage or handling charge! No minimum purchase! For a free catalog send SASE to: **MG-Data,** 8207 Currie Avenue, Wauwatosa, WI 53213. 9-81

Quality Gambling software with statistics and graphics for IBM PC/XT/AT and compatibles. Free catalog. **Sherware,** PO Box 375, Mountain View, CA 94089. 7-83

RENT AND COPY

IBM PUBLIC DOMAIN
$1 PER DISKFULL!

Rent the Best of the Public Domain or use our low cost copy service! Fast Service-Credit cards accepted-Moneyback Guarantee! Send #10 SASE for details (Specify Computer): **Futuresystems,** Box 3040(C), Vista, CA. 92083. - 24 hour recorded info/order: **619-941-3244.**

★ ★ ★

SALES REGISTER is a flexible point of sale software package that will enable your IBM PC or compatible to operate like an electronic cash register, perform the same functions, & produce the same management report information; plus much more. To name a few, Sales Register provides automatic inventory management of quantity in stock, quantity sold daily, quantity sold yearly &re-order quantity for each item in the inventory file. Daily, monthly, quarterly, & yearly management reports. Four presettable tax rates, cost of goods sold, gross profit, cost of goods in stock & item look-up. 8,500 line items can be stored on each 360 Kbyte floppy. Can be used with floppy disk, hard disk, or ram disk. Demo. Disk & manual $15; Complete package $495. **ABM,** Box 144, Hessmer, LA 71341. **318-563-4428.** 8-81

★ ★ ★

SAVINGS BOND OWNERS

Bondcalc computes Series E/EE redemption values, interest earned. IBM PC/compatibles. $49.95 check/mo. $back guarantee. **PC Products,** 11200 Lockwood Drive, suite 307, Silver Spring, MD 20901. **301-593-2571.** 8-82

SOFTWARE: All the programs you thought you couldn't afford, $15-$20. Manuals, disks or both. List on Diskette. Send $15. **Al Levy,** Box 71, Hicksville, NY 11802. 516-293-8368. 10-86

SOFTWARE

Palantir WP $50; Dbasell $200; ALPHA Data Base Manager II $50; ALPHA Type Faces $50; PEACHTREE Payroll $100; BPI General Accounting $100; OPTIMUM DBM $80; Dow Jones Reporter $40; IBM Emulator software 3270 SNA new $200; 3270 BINARY SYNC. new $200; 5250 new $160; 3101 $65; IBM Filing/Reporting Assistants $80/both; pfs Report $40; IBM Cluster Program $40; IBM Professional Editor $50; IBM Personal Editor $40; PC-DOS 1.1 $10; Visicalc $30; Peachtext 5000 $100; Peachtext $20; Dollars and Sense w/Forecast $80; New Word/WORD+ $75; Multimate $40; Sidekick $20; Condor 3 $200; Condor 1 $75; Q&A $200; Enable 1.1 $250; Microsoft WORD 2.0 $125; 3.0 $200; SIDEWAYS $25; HOMEBASE $30; Home Acountant+ $30; pfs:PLAN $75; WORDSTAR HOMEBASE 3.3 $100; CALCSTAR $40; These are like new with warranty cards.

HARDWARE

TECMAR Wave w/64k $80; TECMAR 2nd Mate $100; TECMAR Scribe Tender (2-serial, 1-Parallel) $100; AST I/O II Plus $100; PERSYST Uniport (clock & parallel port) $50; IBM Display Station Adaptor w/documentation $300; ORCHID PC-NET board $100; Baby Blue I CP/M board $100. **S. Mills,** 4615 Orleans Blvd., Jefferson, LA 70121. **504-733-9611.** Add-post.

★ ★ ★

SOFTWARE TO GENERATE BANNERS & POSTERS

This Christmas, give your friends & loved ones a neat stocking stuffer. Our software makes 5 full-length Holiday Banners: Christmas, New Years, & Valentines. Also included are 7 of your favorite full-sized Posters: Mona Lisa, Crusader, Lunar Lander, & Liberty Bell. You can customize these posters by using the captin & calender generators which are also included. This software drives any dot matrix or solid impact printer which has a wide-carriage & which responds to standard Ascii (including Ascii code 8). The software is menu driven and it runs on any IBM-PC or true clone under DOs 2.0 (or higher) that has a DSDD disk drive. This product is perfect as a gift, for making holiday decorations, or for give-away programs. Send $15 PP CCR (FL Residents: $15.75) to: **The Sunny Software Development Co.,** 702 Clark Dr., FWB, FL 32548. (Bulk Discounts Available).

★ ★ ★

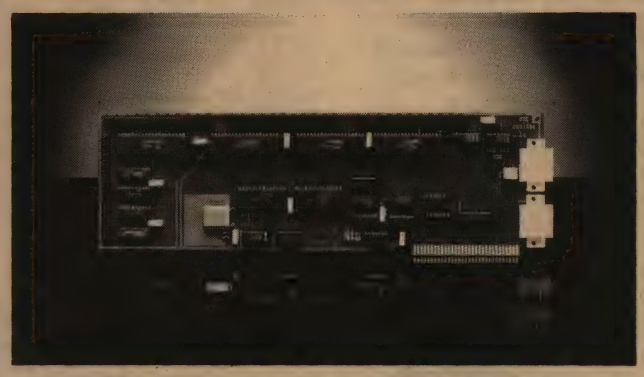
Super Printing Utility will control printer, slash zeros, set page length, print headers, set margins, much more! PC/MS-DOS 2.1+ $8 single user, $25 site license. No CODS. **S.E. Margison,** 124 Sixth St., Downers Grove, IL 60515.

Survey-Boundary MS DOS 2.11 basic $29.95. Description $1. **P. Billings,** 12134 Bonnie Terr. Dept. CSE, Seminole, Fl 33542. 6-82

THE POWER OF TURBO PROLOG: THE NATURAL LANGUAGE OF ARTIFICAL INTELLIGENCE. A manual about the new affordable Turbo-Prolog language (a super fast Prolog compiler) from Borland that brings artifical intelligence to the personal computer. This book includes instructions in the Turbo-Prolog language and shows how to program expert systems, previously available only with fifth generation mainframe computers, on your microcomputer. Send $16.45 to: **CABLETRONICS,** Box 30502CS, Bethesda, MD 20814.

THE PRICEBOOK maintains price & product information and is currently being used by retailers, subcontractors, and mfg. reps., to create quotations and/or invoices. Price $100. **RJL Systems,** 106 New Haven Ave., Milford, CT 06460. Tele 203-878-0376. 9-82

HOW TO PUT YOUR IBM-PC TO WORK IN THE "REAL-WORLD"
(First, Buy This Board!)



96 TTL I/O PORTS FOR THE IBM-PC

The Model 1018 Multi-I/O Board for the IBM-PC: ICD has packaged **96** Input-Output Channels onto a single full-length board for the IBM-PC, XT, and buss-compatibles. This high-density TTL-level I/O board can be used to monitor switches and sensors, control relays, motors, even drive low-current LEDs directly! Simply instruct the on-board PIO (parallel input-output) circuitry to sense or output +5 Volt signals in groups of 8 (making 12 groups possible). An additional 48 TTL Inputs and 2 RS-232C Serial Ports provide unprecedented capability on a single board! Optional 64-pin header connectors with attached ribbon cables will plug directly onto the board, available in 4, 10, and 20-foot lengths. Ideal for many OEM, VAR, and computer enthusiast uses in process monitoring and control, energy management, security, home control, and other "Real-World" applications! Includes sample application software listings for the PC, pinout diagrams, and handy "channel assignment" sheets.

- 12 Eight-Bit Parallel TTL-Level I/O Ports Utilizing 8255 PIO Devices
- 4 Eight-Bit Parallel TTL-Level Input-Only Ports
- 2 RS-232C Serial I/O Ports with Jumper-Selectable Baud Rates (110 Baud to 19.2K Baud)
- Crystal-Controlled Communications Timing
- High-Current Serial Output Option
- Hardware-Selectable Base Address (allows multiple board use)
- Occupies One Full-Length IBM-PC Expansion Slot

1018 PC-I/O BOARD $495.00. Now available through ICD Products Dealers and Representatives Worldwide.

More ICD "Real-World" Computer Interfacing Products:

RTS-1	Remote Temperature Sensor
RLS-1	Remote Light Sensor
RMS-1	Remote Moisture Sensor
RSDA-1	Remote Smoke Detector Alarm
HVAC-1	Remote HVAC Controller Module
ADV Series	Remote-Controlled Air Duct Valves
S-100	Analog I/O and Calendar/Clock Boards

FOR MORE INFORMATION: SIMPLY MAIL THIS AD WITH YOUR BUSINESS CARD OR PRINTED NAME & ADDRESS TO ICD AT THE ADDRESS GIVEN BELOW, OR CALL (818) 889-3179, M-F, 8AM TO 5PM, PST.

SPECIAL OFFER! PURCHASE ICD'S POPULAR BOOK, "HOW-TO" APPLICATION NOTES, AT 25% OFF THE COVER PRICE — SIMPLY ENCLOSE THIS AD & CHECK OR MONEY ORDER FOR $18.75 + $2.00 S&H (ALASKA & HAWAII $3.50 S&H). ALLOW 2-4 WEEKS FOR DELIVERY.

Industrial Computer Designs

INDUSTRIAL COMPUTER DESIGNS, INC.
31264 La Baya Drive
Westlake Village, CA 91362
(818) 889-3179

DEALER INQUIRIES INVITED

★ ★ ★

THE PRIVATE LINE™
PC/XT/AT/MS-DOS COMMUNICATIONS/DATA SECURITY
$49.95

Encrypts text, data & programs (including Wordstar, Lotus 1-2-3, & dbase II/III files). Uses US Government Data Encryption Standard (DES). Converts encrypted data to ASCII for use w/tele-communication systems such as Easylink & MCI mail & bulletin boards like Compuserve. Supports pathnames & double encryption - 1 or 2 64-bit keys. Displays (includes binary files), prints, & purges files. Available for IBM PC/XT/AT & compatibles w/MS-DOS 2.X & up (includes DOS 3.X). CP/M version available ($29.95). With 40-page User Manual. Not copy protected. Site licenses avail. Licensee inquiries welcome. Checks, VISA, Master Card, & money orders. **EVERETT ENTERPRISES,** PO ¼box 279, Bath, NC 27808. **919-923-5621.** Telex II: 5101011171. CompuServe: 70320,107. 8-83

Computer Handicapping Flats & Harness Racing

The Players Edge!

HANDICAP the races with TRACK MAN 2.0. $34.95 PPd. Check, M.O. or call **804-420-8380** for MasterCard & Visa orders. Write for brochure & information on our new computer bulletin board for racing enthusiasts.

★ ★ ★

TTL Monitor Liquidation!
Only $59

12" Green High Resolution TTL Monitor, made for Cordata by Victor Data Systems. 400 line resolution. Some of the cases have slight cosmetic imperfections, but we've tested them and they're all in good working condition. 30 day 100% Satisfaction Guarantee.

BCE 1-800-545-7447

Ask for Operator 28

★

TURBO Cheques! and TURBO Budget!

TURBO Cheques! is the most powerful personal Checkbook management program available for the IBM-CC. TURBO Budget! provides budget management tracking capabilities. Both programs are professionally developed, easy to use, support color, hard disks and contain no copy-protection. 140+ page Users manual. FREE Demo disk available with self-addressed .54 stamped mailer. For the IBM-PC/XT/AT and true compatibles (Requires DOS 2.0 or higher, 2 DS/DD floppy disk drives, 128k RAM). $49.95 for both programs. **CompuTech,** Box 7000-309, Redondo Beach, CA 90277. **213-377-7198.**

★

TYPEWRITER.PC

TYPEWRITER.PC is perfect for those who want to use their computer and printer like an electronic typewriter. Type/edit/print by line. Perfect for all those tasks a word processor can't do or can't do conveniently, such as addressing envelopes, typing all kinds of labels, filling-in pre-printed forms, writing memos, notes, letters etc. Some of the many features of this very easy to use, menu-driven program, include: Adjustable margins and tabs, that you can also save/load, auto centering, auto return name/address printing. Bonus! Also can automatically print return name/address labels! Not copy protected!! Program and complete instructions for IBM and compatibles only $30.00!! Send check or money order for $30.00 plus $2.50 shipping/handling (CT residents add $2.25 sales tax) to: **Computer Specialties,** Box 1581, Fairfield, CT 06430. 10-84

Trade IBM/PC software. Please send your list to: **Claude Hebert,** PO Box 522, Boucherville, Quebec, Canada J4B 6Y2. 9-82

Turbo Pascal version 3.0 w/BCD $40; dBase III $200; RealWorld complete accounting system $50; Attache Software Invoicing/Sales Analysis $25, Complete license transfer. **Richard Seale 303-449-4897 /443-4681.** 9-81

UNIX FANS
NROFF for the PC!

At last, a version of the UNIX NROF text formatter for the IBM PC and compatibles. Written to the specifications of Ossanna's NROFF/TROFF Reference Manual with 62 of the 76 NROFF commands implemented. Macros or work-arounds are provided for 8 of the remaining 14. Examples, macro package, and PCROFF-specific instructions included. For users manual, use one of the excellent texts below available from any large book store or we can supply. Copyrighted, but not copy protected.

PCROFF (TM), (Introductory offer) . . . $50
The UNIX System, Bourne $22.50
The UNIX BOOK, Banahan and Rutter $20
Intro to the UNIX System, McGilton & Morgan $22.50
UNIX Programmers manual, V2 Ossanna, et al $40

James D. Wood
404 Streamside Dr.
Fallston, MD 21047
All items shipped PP
MD Residents add 5% tax.
UNIX is a reg. TM of Bell Labs 9-82

$$WIN$$ Word Contests, Enter letter value, Pascal lists sorted words & values w/dictionary & speller for/only $10. Free catalog. **813-888-5806, Multi-Krafts Comp. Co.,** 9604 Elgin Court, Tampa, FL 33615. 10-82

$$$WIN with Thoroughbred, Harness, Greyhound Handicapping Software...$29.95, enhanced...$49.95. Professional Football Handicapping System...$39.95. Free information. **Software Exchange,** Box 5382CS, W. Bloomfield, Mi 48033. **313-626-7208. 9-82**

. . For an offer you can't refuse . . .
GODFATHER'S used computer SYNDICATE

$$$$ New Human Edge software at an incredible price!!! Retails for $250 --- Wholesales for $150 - Our price only $35 delivered!! For Sales Edge, Negotiation Edge, Communication Edge, or Management Edge from the folks who brought you Mind-Prober!! In original wrapping. **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**

WORDPERFECT 4.1, current, complete, legal copy, $150.00. **919-968-4725.** 9-82

WORDSTAR
WordStar MS/DOS

Wordstar Pro Pak $210
Wordstar 2000 . . . . . $249
Wordstar 2000+ $279
Infostar $59
Calcstar $39

213-671-6075 10-83

★ ★ ★

X-RATED SOFTWARE

The best xsoftware for IBM & compatibles. Watch these girls! Graphics card needed. Send $9.95 + $2 shipping for Volume 1 software on a DSDD diskette. To: **AOS,** PO Box 106, Marion, CT 06444. Must state age is over 21. 10-83

★ ★ ★

XT COLOR

Color graphics card with printer port and 13" high resolution RGB color monitor $375. Nice combo for XT and compatibles. **904-694-6923, Hughes Engineering & Associates,** PO Box 7164, Ocala, Fl 32672.

★ ★ ★

ZapLABEL for label and envelope addressing. Fash, high-quality commercial program $9 + $1 postage. **Mr. GoodSoft,** 813 Engleman Place, Loveland, CO 80538.

dBaseIII+/FrameWorkII. Like new, unlicensed, unopened. $300. **801-578-1415.**

(116) NEC COMPUTERS FOR SALE

NEC APC, Mono, 256K, Graphics board, 2-8' drives. MS-DOS, CP/M-86. dBase-II, Word star, Supercalc II, DR-Draw, DR-Graph Other software plus blank disks **216-238-3862** after 7pm.

(116A) NEC COMPUTERS WANTED

NEC-APC, NEC-3530 SpinWriter; NEC-P5 Epson LQ 1500 wanted in running condition. **201-757-2839,** Box 187, Newark, N. 07102. 6-8[illegible]

(116B) NEC SOFTWARE, PERIPHERAL

NEC 8801A, 8831 dual disk drives. LQ15 printer. Wordstar, Mailmerge, Multiplan, Basic, CPM 2.2, $950. Call **216-234-3974** after 6PM. 10-82

NEC-APC with color monitor, 2 floppies, hard disc, 256K, high performance graphics controller, modem and printer cables, CP/M-86, WordStar Professional, SuperCalc2, MS-DOS, Lattice 'C', Lattice Screen Editor, hundreds of DS/DD floppies, and additional software. NEC 3530 SpinWriter with bidirectional tractor and single sheet feeder. $3900 or offer, **Mike Landis** at (312) 881-8200.

NEC PC-8201. - Send for free catalog of compact affordable software. **CSA Software,** PO Box 22261, Chattanooga, TN 37422. 6-84

Public Domain Software for NEC PC-8001 and PC-8801 only. 145 disks in CP/M and NBASIC, $4 each. Send SASE for catalog. **Long Island NEC Users Group,** 75 Weaving Lane, Wantagh, NY 11793. 8-84

(117) OHIO SCIENTIFIC

C-3 OEM 56K computer, two 8" DSDD drives. Hazeltine Espirit III graphic terminal. C-Itoh 1500-25R printer, 65U DOS, DMS accounting. Microsoft Cobol & CPM included at no charge. Like New condition. $1000 or offer. **Olin Blair,** 912-263-8902. 9-81

(117A) OHIO SCIENTIFIC COMPUTERS WANTED

(117B) OHIO SCIENTIFIC SOFTWARE, PERIPHERAL

VINTAGE DOS Wanted: OS-65D V3.3 incl. manual. Other versions? Will pay reasonable price. **Niels Larsen,** 304 Deerfield Rd. #1, East Syracuse, NY 13057.

(118) OSBORNE COMPUTERS FOR SALE

CP/M Multiplan, Osborne Format. $50.00 each. **405-341-7437.** 9-82

. . For an offer you can't refuse . . .
GODFATHER'S used computer SYNDICATE

$$$$ I Buy, Sell, Trade Osborne computers. We have A 10 MEG Trantor drive. Call for prices. **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**

(118A) OSBORNE COMPUTERS WANTED

(118B) OSBORNE SOFTWARE, PERIPHERAL

100's of FREE OSBORNE software programs available from Public Domain Users Group. For information send large SASE to **PUBLIC DOMAIN USERS GROUP,** Box 1442-C8, Orangepark, FL 32067. 8-81

(120) MS/DOS COMPUTERS FOR SALE

★

★ ★

BIG GARAGE SALE

Save even more on high quality computers! We've got some returned and used items we need to clear out of our warehouse. All of this equipment has been tested and is guaranteed to be in good working order upon arrival.
Be sure to see our RED FULL PAGE SECTION for other bargains.
Columbia Computer, 256K, 2 Floppy Drives $549
Columbia Keyboard (Keytronics 5150) $59
Olivetti M18 (Made by Corona), 512K, 2 Floppy Drives, Keyboard (Keytronics 5150) $629

BCE 1-800-545-7447

Ask for Operator 28

★ ★ ★

HP LIQUIDATION

HP 110 Portable - 256K RAM, Lotus 123, Modem/software, 16 line screen, reconditioned/tested/warrenteed by HP, 10 day return guarantee, free shipping, quantities limited. VISA/MC accepted. $859. **Tectran 1-401-467-8888.**

Victor 9000 computer w/dual drives, printer, MSDOS, Wordstar™, etc. Leave any reasonable bid at **913-649-6285.**

(120A) MS/DOS COMPUTERS WANTED

(120B) MS/DOS PERIPHERALS

Attention IBM WordStar Users:

MAIL MERGE
STAR INDEX
SPELLSTAR
WORDSTAR

70% Off
For IBM PC and Compatibles

MailMerge - Merges WordStar files and creates personalized form letters; assembles mailing lists and labels. List Price $99 . . . . . ONLY $29
For more details on this and other super bargains, look for **BCE's** red pages in this issue.

BCE 1-800-545-7447

Ask for Operator 28

★

★ ★

BCE GARAGE SALE!

Save even more on high quality monitors! We've got some returned and used items we need to clear out of our warehouse. All of this equipment has been tested and is guaranteed to be in good working order upon arrival.
Be sure to see our RED FULL PAGE SECTION for other bargains.
Amdek 310G TTL 12" Monitor (Made for Olivetti) $69
Magnavox TTL Monitor (Made for Leading Edge), amber and green screens available $65
Samsung amber composite monitors $30

BCE 1-800-545-7447

Ask for Operator 28

★

★ ★

BCE GARAGE SALE!

Save even more on high quality printers! We've got some returned and used items we need to clear out of our warehouse. All of this equipment has been tested and is guaranteed to be in good working order upon arrival.
Be sure to see our RED FULL PAGE SECTION for other bargains.
NEC PR103A $119
Commodore 6400 . . . . . $319
Canon PJ1080A $169
Axiom DX2000 Sheet feeder $49
Axiom DX2500 Sheetfeeder $49

BCE 1-800-545-7447

Ask for Operator 28

★

★ ★

BCE GARAGE SALE!

Save even more on high quality software! We've got some software we need to clear out of our warehouse. This software was originally bundled with one of the computers we sold and we've got a bunch left over. All is like brand new in sealed packages.
MicroPro Software – WordStar, Spell Star, MailMerge, StarIndex, DataStar, ReportStar, CalcStar. For IBM PC and compatibles. Complete package only $59
Be sure to see our RED FULL PAGE SECTIN for other bargains.

BCE 1-800-545-7447

Ask for Operator 28

★

★ ★

TTL Monitor Liquidation!
Only $59

12" Green High Resolution TTL Monitor, made for Cordata by Victor Data Systems. 400 line resolution. Some of the cases have slight cosmetic imperfections, but we've tested them and they're all in good working condition. 30 day 100% Satisfaction Guarantee.

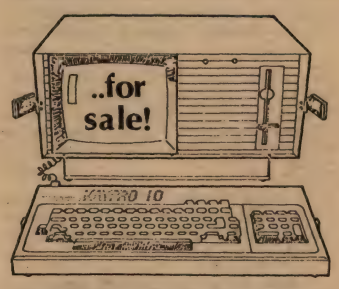
BCE 1-800-545-7447

Ask for Operator 28

(121) KAYPRO COMPUTERS FOR SALE

. . For an offer you can't refuse . . .
GODFATHER'S used computer SYNDICATE

$$$$ I Buy, Sell, Trade, Osborne computers. Call for Prices. **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**



MUST SELL Kaypro 10 & 2X. New condition. Professionally maintained. Software, cables, manuals included. No reasonable offer refused! Call **Hal or Rick,** 312-741-7700 or write: WJKL, 14 Douglas, Elgin, IL 60120. 9-81

(121A) KAYPRO COMPUTERS WANTED

(121B) KAYPRO SOFTWARE, PERIPHERALS

$25 DRAWING PROGRAM! works with ANY Kaypro, other CP/M computers. Point-to-point drawing is supplemented with commands for rectangles, circles, ellipses,

lines, variable shading and erasing, and more. Little Artist That Can allows you to view a section of a 6x4" printout while drawing. A rough on-screen representation of the entire drawing is available at the press of a key. Printout with graphics-equipped Epson, Star and compatible printers. Simple, easy to use instructions on disk. **Dennis Gimlin,** Little Software That Can, PO Box 998, Rantoul, IL 61866. 10-83

$36 ACCOUNTING SOFTWARE! Little Accountant That Can maintains 100 personal or product accounts, prints statements, records expenses under 12 redefinable categories, and prepares summary reports (instant tax preparation). Ideal for small and home-based businesses. Compiled for CP/M Kaypros, BASICA/GWBASIC and MBASIC versions for other computers. **Dennis Gimlin,** Little Software That Can, PO Box 998, Rantoul, IL 61866. 10-83

43c/PROGRAM for the best 70 KAYPRO public domain programs - including 16 games (adventure, blackjack), 40 utilities, 13 application programs and Modem7 (Kaypro version). Send $30 for 6 disk set to **PUBLIC DOMAIN USERS GROUP,** Box 1442-K1, Orangepark, FL 32067. 8-81

Crosstalk $75; CP/M User Group Library - 100 disks, $250; PERSONAL PEARL $100. **S. Mills,** 4615 Orleans Blvd., Jefferson, LA 70121. **504-733-9611.** Add-post.

★ ★ ★

TTL Monitor Liquidation! Only $59

12" Green High Resolution TTL Monitor, made for Cordata by Victor Data Systems. 400 line resolution. Some of the cases have slight cosmetic imperfections, but we've tested them and they're all in good working condition. 30 day 100% Satisfaction Guarantee.

BCE 1-800-545-7447

Ask for Operator 28

(123) SANYO COMPUTERS FOR SALE

SANYO MBC-555-2 256K, 2-360K drives, CRT-30 monitor, bundled software, A-OK-DOS. Mint, original cartons. $675. **408-372-6454** eves. Dr. McKechnie.

SANYO MBC 555, 2DSDD disk drives, 256K green monitor. Wordstar, Calcstar, Easywriter included. Perfect condition, $600. **David Sewell,** 106 Murrell, Somerset, KY 42501. 606-679-5886.

(123A) SANYO COMPUTERS WANTED

(123B) SANYO SOFTWARE, PERIPHERAL

Infostar Manuals complete documentation to finally use the great software you got free with your system. $45 per set PP. VISA/MC. **503-359-5920** or PO Box 782, Forest Grove, OR 97116. 8-81

PUBLIC DOMAIN SOFTWARE for Sanyo MBC 55X computers, all tested on Sanyos. Games, financial, utilities, more. $1 (refundable) for detailed catalog. Free Newsletter. **SOFTWARE LIBRARY,** POB 204, Prosser, WA 99350.

SANYO 550/555 PUBLIC DOMAIN RENTALS

110 VOLUMES-RENT AND COPY for $1 each or we copy for you. $3 SSDD; $6 DSDD. Sampler $5. Mastercard, VISA! Recorded info/order **619-941-3244 (Anytime): Futuresystems,** Box 3040(C), Vista, CA. 92083.

SANYO PROGRAMS: "Bombrum," arcade-type game; records high scores, saves games. "Personal Post Office," mailing management program; add, delete, modify, fast binary search, sort, preview labels. $10 each, both $17.50, postpaid. **M.C. Thomas,** 317 Redwood Drive, Charleston, WV 25302.

SANYO SOURCE LIST— commercial programs, sources, prices; all available for Sanyo MBC 55X— our unique list helps you find everything you want for your Sanyo! Just $3.00. **CONCEPTWARE,** POB 204, Prosser, WA 99350.

★ ★ ★

"Sanyo MBC 550/555 Beginner/Intermediate Guide." 360+ pages and disk with 56 programs. $29.95 postpaid USA/Canada. VISA/MC okay. **818-346-7024, Fred Blechman,** 7217 Bernadine, Canoga Park, CA 91307. 9-84

★ ★ ★

"Sanyo MBC 550/555 Beginner/Intermediate Guide." 360+ pages 2nd disk with 56 programs. $29.95 postpaid USA/Canada. VISA/MC okay. **818-346-7024, Fred Blechman,** 7217 Bernadine, Canoga Park, CA 91307. 9-81

Sanyo Software—Easywriter (new) $15; BPI Business Set (new) $89; Copylink (new) $35; Micropro Datastar/Reportstar set $60. **GBCS,** Box 83, Laurel, MD 20707. **301-498-0121.** 9-81

Survey-Boundary 55X/675 (specify) MS DOS 2.11 basic $29.95. Description $1. **P. Billings,** 12134 Bonnie Terr. Dept. CSA, Seminole, FL 33542. 6-82

Survey-Boundary 55X/675 (specify) MS DOS 2.11 basic $29.95. Description $1. **P. Billings,** 12134 Bonnie Terr. Dept. CSA, Seminole, FL 33542. 6-83

TRACKER

New Checkbook program for the homeowner or for small business applications. Designed for ease of operation. Comes with custom installation program. For the Sanyo 550/555. **Tracker,** with manual $39.95 PP.

OPUS 6/7

SMART terminal programs for the Sanyo 550/555. For both the standard Sanyo, and the Sanyo with Video Board. OPUS 6/7, with manual, $37.95 PP.

OMEGA

WINDOW program for the Sanyo 550/555, with a graphics CLOCK, 30 year CALENDAR, and spelling LEXICON. The OMEGA disk, $20.00 PP.

XENO

DISK editor, and other programs, for the Sanyo 550/555. XENO disk, $15.00 PP.

OPUS 8

SMART terminal program for the IBM PC/XT, Clones, and true Compatibles. OPUS 8, with manual, $37.95 PP.

EPROM

EPROM programming available. Call or write for details.

BOB JACK SOFTWARE
8371 White Road
Burbank, OH 44214
216-948-2059

9-82

WANTED: EFD-360 Sanyo dual floppy 5¼" external drives with cable. **Dave Young,** 402 Houghton, Ontonagon, MI 49953.

(125) SINCLAIR COMPUTERS FOR SALE

QL COMPUTER

128K Expandable to 640K — 4 Business Programs included: Word Processor, Database, Spreadsheet and Business Graphics. 2 Serial ports, 2 j/s ports, LAN up to 64 machines, 2 built in MicroDrives. High-level languages available (Lattice C, Pascal, etc.), Graphics programs, Utilities. Suggested Retail under $300. Call for our package specials. We are the oldest authorized QL dealer in the US. Call or write for **FREE CATALOG.** 1-602-978-2902. 24 Hour Toll-free order line listed in catalog. **Curry Computer;** PO Box 5607, Glendale, AZ 85312-5607. 10-84

★ ★ ★

SINCLAIR QL-$299

Includes free software. First 50 orders will receive extra gift. Also stock QL-monitors, QL-printers, books and software. Ohio's only authorized Sinclair dealer. We service what we sell. Call us! **Brice Road Pharmacy,** 1653 Brice Road, Reynoldsburg, Ohio 43068. **614-861-3600.** 7-81

Sinclair QL computer and extra software, $275 used; Delta 3-in-1 interface with 128K, a disk interface and parallel printer port, $225; Two 3" Amdek disk drives, power supply and cable $125. All for $550 and shipping. **904-378-9000** evenings.

AFFORDABLE HARD DISKS FOR YOUR Z80

HARD DISK SYSTEMS by Emerald Microware

Now is the time to take advantage of the low prices on hard disk drives. We have everything you need from the host board to a complete turn-key system for your computer, order only as much as you need. Runs on Xerox 820-1 or -2, Kaypro, or most **ANY Z80** based system.

HDS Host board
- Plugs into Z80 socket, no wiring required (special 50 pin host is available for Kaypro 84 series computers)
- Interfaces directly with 40 pin Western Digital 1002 series controller boards
- Comes fully assembled and tested
- Switch selectable I/O addressing

HDS Software package by MICROCode Consulting
- Drivers locate above your existing operating system and BIOS, so it will not interfere with your other programs that install down below.
- Custom installs for your system without having to assemble any software
- Reserves system tracks and swaps so you can Warm Boot from hard drive
- Allows installation of up to two hard drives and two 5¼" floppies on one WD1002-05 controller board
- Runs diagnostic on system each time hard drive is installed
- Can be configured for 5 to 40 Meg hard drives, from menu or custom install
- Includes manual, FORMAT, TEST, PARK, INSTALL, and SWAP utilities

Western Digital 1002-05 Hard Disk Controller Board
- 5¼" profile with standard 5¼" power connection (only 5 VDC required)
- Has WD2797 floppy controller and interface on board
- Can control up to three hard drives and four 5¼" floppies.
- 40 pin host interface
- ST506 compatible hard drive interface

HDS TURN-KEY HARD DISK SUBSYSTEM by Emerald Microware
- External hard disk subsystem complete with all cables, controllers, hard drive, and cabinets with power supply, fully tested and burned in: Host adaptor and full installation kit supplied with software on disk format of your choice.
- Internal hard disk subsystem for '84 series Kaypro computers, complete with host, controller, cables, 3½" hard drive, mounting hardware, and fan.
- Available as 10, 20, or 40 Meg, single or multi-drive systems
- External units available with both hard disk and 5¼" quad density floppy drives installed

10 Meg Single drive Subsystem	$ 795.00
20 Meg Single drive Subsystem	$ 995.00
Host board with software package	$ 89.00
WD1002-05 Hard disk controller board	$ 185.00
WD1002-05 controller with Host and software	$ 250.00
20 Meg with dual 5¼" floppy subsystem	$1295.00

XEROX BOARDS AND ACCESSORIES

We stock a limited quantity of Xerox parts and accessories for the 820 computers.

Xerox 820-2 Main Computer Board	$ 95.00
Xerox 820-2 Floppy controller board	$ 75.00
Xerox 820-2 Main board with floppy controller board	$150.00
Xerox 5¼" disk drive cable	$ 12.00
Xerox internal video harness with brightness control	$ 9.00
Parallel ASCII keyboard (no numeric pad) with docs	$ 25.00
PC mount power connector for 820 board	$ 2.50
Dual half height, 5¼" disk drives (new), DSDD - 48 TPI, in cabinet with Xerox standard cable	$265.00
Dual half height, 5¼" disk drives (new), DSQD - 96 TPI, in cabinet with Xerox standard cable	$295.00

We guarantee satisfaction on all of our products or your money back. Include $4.00 shipping and handling, $7.00 for COD, call for Blue Label charges. Phone hours: 8:30am to 5:00pm weekdays; modem hours: 10:00pm to 8:00 am seven days a week.

WE SUPPORT OUR CUSTOMERS

Is single density making your Xerox 820-1 feel crowded?

DOUBLE DENSITY FOR THE XEROX 820-1 OR BIG BOARD I

Clearly the most versatile double density package available for the 820-1. Lets you run up to four disk drives at once, and mix 5¼" & 8". Runs almost all Kaypro and Xerox 820 software. Supports all standard printers and most add-ons such as the Ferguson ram board. Our ROM sets operate in banked mode to allow more space in the TPA for your programs. You get Mini-monitor functions, autoboot capability, automatic disk identification (up to 19 formats built in), IOBYTE enabled for device selections, and you can read and write 48 TPI disks on 96 TPI disk drives.

X120 Board - assembled and tested - with ROM set	$160.00
X120 Board - full kit - with ROM set	$140.00
X120 Bare board with ROM set	$ 72.00
X120 Bare board only	$ 26.00
ROM set only	$ 50.00
Hard to find parts set (trimmers, caps, resistors)	$ 12.00
WD2793 controller chip	$ 22.00

Other packages available.

Can't find CP/M for your Xerox? Now you don't need it.

QP/M by MICROCode Consulting

At last, an inexpensive replacement for CP/M, and you don't need CP/M to get started! Get full CP/M compatibility with many new options. Stamp your file with the time and date - transparent to your operation, automatically re-log your disks (no more control C), change your default drive search from the keyboard, use up to 31 USER areas, select your disk drives or user areas with semicolon or colon, maintains ARCHIVING bit for efficient backups (great for hard drives), and much, much more. Runs in native Z80 code, in the same space as CP/M 2.2. Has menu oriented install for use on ANY Z80 based system. Available as a bootable disk (with BIOS) for the Xerox 820-1, 820-2, 820-XPRO, 820-PLUS2, or Kaypro.

QP/M, bootable for the Xerox 820-1, 820-2, or Kaypro	$ 80.00
QP/M, bootable for the Xerox 820-1 using XPRO or PLUS2	$ 65.00
QP/M, without BIOS (not bootable)	$ 60.00

Tired of carrying your computer back and forth? Why not just the diskette?

UNIFORM and UNIDOS by Micro Solutions

The solution to the diskette incompatibility problem. This program allows files to be transferred back and forth between close to a hundred computer formats including between CP/M and MSDOS. Lists computers by name - no special technical knowledge required. Versions available from stock for the Kaypro (XPRO), Xerox 820-2, Morrow MD2&3, and IBM 100% compatibles. Other versions available on request. Unidos allows you to run CP/M 80 programs on your IBM compatible. Requires NEC V20 chip on P.C.

Uniform or Unidos	$ 64.95
IBM Uniform with Unidos and V20	$145.00

PANASONIC HALF HEIGHT DISK DRIVES

These are some of the finest new 5¼" disk drives. They are fast, reliable, and have about the lowest power consumption around.

National JA551 (Shugart 455) - DSDD, 48 TPI	$114.00
National JA561 (Shugart 465) - DSQD, 96 TPI	$129.00

EMERALD MICROWARE

P.O. BOX 6118 ALOHA, OR 97007 (503) 642-1860

TS 2068 Computer printer, Datasette 16K RAM module, programs, handbooks, magazines. Excellent condition $150 offer. **Tester,** 1212 Punahou St. 2902, Honolulu, HI 96826. **808-521-2759.** 8-84

(125A) SINCLAIR COMPUTERS WANTED

(125B) SINCLAIR SOFTWARE, PERIPHERAL

★

FREE CATALOG, Timex Sinclair 1000, 1500, 2068, Spectrum and QL. **Basically Programming,** Dept. C, 2528 W. Olive Avenue, Fullerton, CA 92633. **714-738-0666.** 6-83.

FREE PROGRAMS!! Timex-1000/Timex-2068 /Timex-1500/Timex-zx81/TI99-4A/Adam/all Apples, Commodores, TRS80's, IBMpc's. Send Stamps! **EZRAEZRA,** Box 5222-PSE, San Diego, CA 92105.

QL-50 Catalog, 50 New and used computers and peripherals. We specialize in software and accessories for the QL. Write for free catalog. "Your Midwest Connection". **Midwest Micro-Computer Co.,** 7039 Magnolia Dr., Jenison, MI 49428. 9-81

QL CATALOG

Software-Hardware-Books-Mags-Accessories. We are an **Authorized Sinclair Dealer-QL-Flat Screen TV–QL S/W. Disk interfaces, RAM expansion,** printers, Centronics interfaces. **Software: I.C.E., GraphiQL, ZKUL, Supercharge Compiler, Concept 3D,** assemblers, graphics, and business packages, games and utility software, Sinclair Research software, **And Much, Much More.** Write for **Free Catalog** to: **Curry Computer,** PO Box 5607, Glendale, AZ 85312-5607. 1-602-978-2902. **Open** 7:00am to 5:00pm MST M-Sat- **Open Till 9:00 PM MST Tue + Thurs.** 7-81

Spectrum Software Converted your 2068 to Spectrum? Write for FREE CATALOG with latest Spectrum Programs from England. **Curry Computer,** PO Box 5607, Glendale, AZ 85312-5607. 9-83

Survey-Boundary T/S-1000 $19.95. Description $1. **P. Billings,** Dept. CSC, 12134 Bonnie Terr., Seminole, FL 33542. 6-82

THE QL REPORT

A Monthly Newsletter published in the U.S. for QL owners and those interested in the QL. Software reviews, books, and hardware reviews, interviews with programmers and QL companies- and more. $15 for 12 issues. Published by: **Curry Computer,** PO Box 5607, Glendale, AZ 85312-5607. **602-978-2902.** 9-85

SINCLAIR QL & T/S2068
Free catalog/call or write
KNIGHTED COMPUTERS
707 Highland St., Fulton, NY 13069
315-593-8219/MC & VISA

WANDERER QL

3-D Graphics/arcade game. Rated 5 stars in Sinclair User. 3D glasses included $37.95. **Curry Computer,** PO box 5607, Glendale, AZ 85312-5607. **1-602-978-2902** Dealer inquiries welcome. RGB color required. 9-85

(126) MISCELLANEOUS MICROCOMPUTERS

VECTOR GRAPHIC
V4/30 5 MB Hd-630 KB Floppy 8 or 16 Bit V4/40 as above but with 10 MB hard disk V4s/30 as above but S. Sector 739 KB FD VS4/40 as above but with 10 MB HD NEC 7700Q Printer 55 CPS Centronics Para C. Itoh F-10-40 40 CPS Daisy Wh. w/tractor.

All equipment is perfect and in original boxes and have word proc. and spr. sheet programs and more included. CPO/M MS-DOS. **M. Richman, 813-885-1789.** 9-81

A CLEAN BASEMENT! Sony 9" Green monitor composite $50. Mitsubishi 1/2H DSDD 96tpi $75. Serial port for RX-80 $50. TI-99 $50. Timex 1000 16K $25. CP/M DR Mac Assembler on 8" $50. Bascom on 8" $50. Over 40 8" diskettes include SIG 153-172 and drive cleaner $45. Books Programmers Guide to CP/M, CP/M Techniques, using CP/M, CP/M Assembly Language, Mastering CP/M, CP/M Techniques, CP/M User Guide $40. 2 yrs Microsystem $25. 2 yrs Creative Computing $25. S-100 CCS Terminator Extender $5. Godbout Ram20 32K 8K stuffed $30. Exidy 2 S-100 Expansion boxes $50. 2 Sorcerer II one works $50. Over 20 Exidy CP/M Micropolis Diskettes various programs $25. **501-427-5425.**

COMPURO COMPUTER $1900. H19Terminal $150. H89 Computer $600. Morrow MD3 with Terminal $600. Softwares included. **415-895-2430.** 10-82

EPSON QX-16 WANTED
Need for QX-16: board to drive hard disk and hard disk; internal modem 1200 bps, other boards. QX-10 boards okay if they work in QX-16. **Rus Schay,** 405 Whitthorne, Wyoming, OH 45215.

Henriksen VideoRighter word processor computer, 5151 type keyboard and Samsung amber monitor $150. SASE. **Roy Kephart,** 4101 NW 19 Terr, Fort Lauderdale, FL 33309.

★ ★ ★

LOBO MAX-80 Super System For Sale. Max-80 w/128K RAM; 2 Shugart 8" DSDD (1.2Meg) drives; 2-5¼" 80 Trk 720K drives; 10 MEG Lobo Hard Disk; Superscripsit, Profile 3 Plus, Newscript, Super Utility 3.1, more! CP/M also. All manuals, documentation, cables, etc. Best system in southeast! **Call Cliff Kirk** at (904) 432-7949 **after 6:00 P.M.** in Pensacola, FL. Only $1495.00 or B/O.

For an offer you can't refuse . . .
GODFATHER'S used computer SYNDICATE

$$$$ IBM 5100 computer & 5130 printer $200 each part. As Is. IBM's first personal computer. Looks really good on your bookshelf though!! **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**

MOTOROLA MC6800 computer system VM02-3. 128K, EPROM monitor, RS-232 ports, chassis with p/s. $285. **Mike,** K16AP, 415-962-8080 or 415-952-3090. 10-82

Micropolis/Vector Graphic Users Group Monthly newsletter, hardware, software. **205-881-1697,** 604 Springwood Cir., Huntsville, AL 35803-1740. 8-87

★ ★ ★

OSM Zeus 4 User System with 25MB HD, 20MB tape, 5¼" floppy, 2 Wyse 50 terminals, Toshiba 1351 Printer, MUSE Operating System, Spellbinder Word Processor. Excellent condition $10,160. Call **Dick 713-496-9074.** 7-83

OTRONA ATTACHE: CPU Boards $25; Video Boards $20; 8/16 boards $25; Remex Drives $7.50; Keyboards $25; Inner Chassis $20; Cases $25; Misc. Parts. 640k Memory Upgrades $260. Call or Write: **Brown Enterprises,** 11506 Adams St., Thornton, CO 80233. 303-452-1409. 10-86

Otrona Attache 8/16 - 640K Memory Upgrades $260; Attache 8/16's $1000 - Parts & Repair Service available. Call or Write: **D & L Enterprises, 303-452-1409,** 11506 Adams St., Thornton, CO 80233. 6-81

SAGE II, 2-800K floppies, 512K, USCD Pascal, Modula 2, $1500. **Andy Dean,** 404-378-9613 eves.

SMC-70 COMPUTER wanted: peripherals and software. SMI-7016 floppy disk control unit. SMI-7060 numeric key pad. SMI-7061 light pen. **408-373-4833.**

Stride Micro 440 10-user supermicro, 1 Mbyte RAM, 33 Mbyte Winchester, VME bus compatible, p-System w/LAN operating system, runs UNIX, $5000/bo, 10 DRP. **Bob 702-465-2473, Sage Associates,** 135 Artist View Drive, Wellington, NV 89444. 9-81

TELEVIDEO TS-803S. Nice, complete CP/M machine. Currently in use. $575 or best offer. Contact **Rob Brott,** 216-699-5889, 2930 Edison, Uniontown, OH 44685.

TRUE PORTABLE SYSTEM—Use anywhere—32K Model 100 "NOTEBOOK" computer; w/"Super ROM" integrated WP/SS/DB/OL ROMware; Chipmunk 360K portable diskdrive; ARMS backup battery; casette; cables; extra software/disks; all fits shoudler bag - 8 lb.; less than 50% new price - $800 + shpg. **215-582-2639.** 8-81

Tektronix 4051 excellent 32K w/4 ROM packs incl., Graph. Enhan., Editor, 4050 EO1 ROM expander $1500 **803-884-3488.** 9-81

Televideo TS801 CP/M computer w/two floppys $200; RS422 board for TS803 $50. **Richard Seale, 303-449-4897/443-4681.** 9-81

Xerox 3200 computer w/dual 8" drives, LQ printer, Accountant's and Word Processing software. Leave bid at **913-649-6285.** Make any reasonable offer.

Z-80 5mhz SBC — these boards come complete with ADC's, DAC's, programmable baud rate generator, 2K static RAM and 2K EPROM. Will make excellent controllers, or use for robotics. We will burn your custom EPROM for free...$35 with schematics. **MEGATECH,** 203-634-4593, M-F, 9-5; PO Box 4213, Yalesville Station, CT 06492. We horse-trade — call or write today!

(127) XEROX COMPUTERS FOR SALE

XEROX 820 II computers low profile keyboard with hard disk (10M) and 8" drive $1000 or 2-8" drives, $750. Lots of software. **703-256-6607.**

Xerox 16/8 computer 10MB hard drive & 8 in. floppy $1250; **Xerox 820-II** computer 2, 5¼" DS/DD drives $875. **Jerry 703-931-4176,** Falls Church, VA 9-81

(127A) XEROX COMPUTERS WANTED

(127B) XEROX SOFTWARE, PERIPHERAL

— BIG BOARD BUILDERS —

KEYBOARDS $25. See "APPLE BUILDER KEYBOARD" ad in category 108 for a super, full ASCII, 83 key keyboard which also works great with the Big Board/820 series computers. Thanks, **Electrovalue Industrial.** 10-84

Keyboard for 820-11, L-P, Genuine Xerox, complete with case and cable, new, $85. **Mike Drum,** 3102 S. Home, Berwyn, IL 60402. 9-81

SUPER SUPPORT FOR XEROX 820-1

NEW BIOS for CPM now allows simultaneous operation of up to four 5¼ and four 8 inch single or double sided floppies. Requires ribbon cable type drive cables, $59.95. Also bios for 5¼ only system allows 350K storage on 80 track double sided 5¼ drives. Supports 40TSS, 40TDS, 80TSS, 80TDS simultaneously, two total drives, $39.95. Includes source, format, single drive copy, and sysgen programs. Also includes new monitor EPROMS which allow boot from either keyboard or a separate terminal, and also allow the Xerox to function as a stand alone ASCII terminal without disk drives. With the purchase of either of the above systems, we offer MRS/OS, a completely CPM compatible operating system, for an additional $19.95. This system comes on bootable disks and runs all commercial CPM software. Includes users manual.

Composite video adapter board inputs Xerox video signals and outputs proper composite video for monitors. A&T PC board with all proper connectors. Requires minor soldering on the 820-1, $17.95. **Eugene M. Toner,** PO Box 69, Fountainville, PA 18923. Check, MO, VISA, MC. 215-249-0673, 9am to 5pm daily orders, 6:30pm to 10:30pm EST Thursday for technical questions.

(128) MISC. MICRO, SOFTWARE, PERIPH.

1000's of FREE SOFTWARE programs for over 80 computer formats including IBM, CP/M & COMMODORE from the Public Domain Users Group. Over 8500 members worldwide. For information send large SASE to **PUBLIC DOMAIN USERS GROUP,** Box 1442-C3, Orangepark, FL 32067. 8-81

5 Megabyte Hard Disk Drives, 2 for $100; These are 8" SA1002 Shugart Winchesters. Controller kit $200. Will intgerface to most computers: 6809, Z80, STD, S-100, Flex, CP/M, Apple, Heath. Call **Digital Search, 803-877-9444.**

DOS-73 BOARD FOR AT&T UNIX-PC. Runs IBM-PC software under MS-DOS 3.1 which runs as a UNIX process. Includes 8mhz 8086-2, 512K RAM, RS232, Hercules graphics emulation, software and manuals. New in original box $500. **Scott, 718-441-8428.**

IBM PC AND CLONES
SANYO 55X & COMMODORE
PUBLIC DOMAIN RENTALS

THOUSANDS OF PROGRAMS YOU CAN RENT and Copy for $1 per disk or use our low cost copy service. Moneyback guarantee. Sampler $5. Mastercard, VISA! Recorded info/order **619-941-3244 (anytime) or #10 SASE for details (Specify Computer): Futuresystems,** Box 3040(C), Vista, CA. 92083.

★

IBM SOFTWARE $10/DISK

2,000 Top Titles in Wordprocessing, Spreadsheet, Database, Integrated, etc. Instant Access!

CALL TOLL FREE
1-800-663-8844

[604-732-7508 in Canada] We've got it! "Call NOW for FREE giant catalog."

VISA

Softsave

Morrow MD-11 Software. **Smartkey II** with Smartprint $20; **READIT & COPYDOS** (reads, writes & formats 60 different diskettes, including **IBM-MSDOS**). $30; **TALK** modem communications program $10; Microsoft **COBOL-80** $150. **M. Rossel,** 45 Susan Ln., Buffalo, NY 14220., Call **716-827-0040.**

RS422 Board for Televideo TS803 $50; IEEE488 board for Okidata 92/93 printer $25. **Richard Seale 303-449-4897/443-4681.** 9-81

(129) S-100 COMPUTERS

8" Hard disk drives, Quantum Q2030 (30 Meg) $100; Q2020 (20 Meg) $75; Shugart SA 1106 (30 meg) $75; SA 1004 (10 MEG) $60. In quantity prices negotiable call **ERD Systems, Inc., Ed Lewis, 617-452-6000 or 617-852-5852.** 9-81

ADES S33 Winchester disk system — PRIAM 3350 14 inch 33 Megabyte drive, cabinet, S-100 controller, and power supply — asking $1200. Computer — Intercontinental Microsystems CPZ48000 single board computer (4mhz Z80) inside Integrand 800DB2F cabinet complete with mother board, power supply, and two Siemens FDD100-8 eight inch drives — asking $900. **Roland Bjorklund,** Rt 2 Box 163-G, Indian Head, MD 20640. Phone 301-753-9461.

COMPUPRO SYSTEM including 10Mhz CPU 86, 192K static ram, Interfacer 4, Disk 1, dual Qume drives (1.2 Mb each), CPM86, C compiler, good editor, other software, original disks, documentation. You supply terminal. Asking $1300. **Leo Chouinard,** 5901 Lillibridge Apt. 5, Lincoln, NE 68506. 402-488-7739 home, 472-3731 work.

CROMECO 512K RAM cards, $300. Morrow: 256K RAM boards, $200; Multi-I/O card, $200; MP Z-80 card, $200; disk controller card, $200; HDC hard disk controller, $200. All working, with complete documentation, 90-day warranty. Vector Electronics 11-slot backplanes, $75. Wonderbus 14-slot backplane with complete system: hard disk drive (40meg.); dual floppies; 4 serial ports, 2 parallel ports; 512K memory; CPM 2.2; much software; all $2,000. **MEGATECH,** 203-634-4593, M-F, 9-5; PO Box 4213, Yalesville Station, CT 06492. We horse-trade — call or write today!

★ ★ ★

CROMEMCO SYSTEM Zero with DPU 68K processor, 256KZ RAM, FDC64 Disk and Tu-Art I/O cards. Includes Qume VT-102 terminal, FDD dual 5¼ DS-DD drives and one 8 inch SS-DD drive. Software includes CDOS, 68K Cromix, CP/M 2.2, 68K Basic, 16K and 32K Basic, Wordstar and many others. All equipment in Mint condition and includes manuals. Sell as package for $1175 or reasonable offer. **Bill Pinkerton,** 1148 Newbern St., Palm Bay, FL 32905. Phone 305-725-0641.

Complete CROMEMCO SYSTEM 3 with much software including CDOS 2.56, runs CP/M, Cobol, PRG II, 32K Basic, and Writemaster finest word processor. Dual 8" disk drives, 3102 Terminal. Price $2,500 or best offer. PO Box 4853, Jackson, MS 39216. **601-982-4101.** 10-82

THE SINCLAIR QL PERSONAL COMPUTER SYSTEM

Personal Computing at an Affordable Price

$299

Optional printer and color monitor.

- Quality software programs at no additional charge — word processing, database management, spreadsheet and graphics.
- 128K Ram Expandable to 640K to meet most personal computing needs.
- Two built-in microdrives with over 100K capacity.
- Over 120 software packages available.
- Two RS232 Serial ports, two Joystick ports, TV and RGB outputs.
- Four blank microdrive cartridges with up to 100K storage each — at no additional charge.
- An easy-to-use full size keyboard.
- The advanced 68008 microprocessor for multiple, simultaneous screen display and running of multiple programs at the same time.

For the dealer nearest you contact:

A+ Computer Response

Prompt, Professional Sales & Service

69-B Island St. • Keene, NH 03431 • 603-357-1800

Compupro: CPU 8588, Disk 1, System support, Ram 16, Interfacer 4, 20 Slot Mother Board, two disk drives, and software. Ask $500. Call **201-445-3343 Chuck.** 9-81

Ithaca InterSystems computer boards: 256k memory $350; XPU $250; MPU $100; 64k memory $100; FDC-2 $200; ISIO $350; Other S-100 boards: Mountain Clock board $100; CCS disk controller $150; DTC-10-1 S-100 hard disk controller and DTC-510a SASI controller $250; A1000 Graphic board set $500. **Frontenac Designs 607-387-5303.8-81**

Micropolis/Vector Graphic Users Group Monthly newsletter, hardware, software. **205-881-1697,** 604 Springwood Cir., Huntsville, AL 35803-1740. 5-87

Micropolis/Vector Graphic Users Group Monthly newsletter, hardware, software. **205-881-1697,** 604 Springwood Cir., Huntsville, AL 35803-1740. 8-84

★ ★ ★

PENSEE S-100 Computer with 2 DS/DD 8" floppy drives, 8 slot motherboard, Compupro 8085/8088 dual processor, Disk 1, System Support, Ithaca Intersystems 64K RAM and Serial/parallel $2500/best offer. CAll **Lee 619-270-1994.**

S-100 SPECIAL

6-SLOT MOTHERBOARD, card cage, fan & power supply $40. Cassette tape controller (tape backup) $15. Z80A CPU - graphics video terminal, single board with monitor, RAM, and ASCII keyboard (kit) $50. Complete lot: $90. **518-439-9411, Robert Paluszak.**

S-100 USERS!!!

S-100 Board Bank buys, trades, sells, consigns ancient, modern S-100 cards, etc. BUYERS: savings on S-100 cards from only $29; send $4.37 ($10 US overseas) to subscribe to our offical voice and ad extraordinaire, THE STATEMENT. SELLERS: send full description, BEST price. Mailorder only - no phone listing. Write **S-100 BOARD BANK,** Box 344, Dept. CH, Olympia, WA 98507. 7-83

TELETEK SYSTEMASTER Z-80 single board computer with S-100 Bus, power supply, 2-1 meg floppy drives, modem board, $500. **Andy Dean,** 404-378-9613.

(130) S-100 COMPATIBLE, PERIPHERAL

5 Megabyte Hard Disk Drive Subsystem for all S-100 systems. Kit $450. **Digital Search, 803-877-9444.**

VECTOR GRAPHIC

V4/30 5 MB Hd-630 KB Floppy 8 or 16 Bit V4/40 as above but with 10 MB hard disk V4S/30 as above but S. Sector 739 KB FD VS4/40 as above but with 10 MB HD NEC 7700Q Printer 55 CPS Centronics Para C. Itoh F-10-40 40 CPS Daisy Wh. w/tractor.

All equipment is perfect and in original boxes and have word proc. and spr. sheet programs and more included. CPO/M MS-DOS. **M. Richman, 813-885-1789.** 9-81

IMSAI 8080 S100 Chassis $195; Electronic systems serial I/O $25; 8k-static RAM $25; 32k-Static RAM $65; 8080 CPU $40; Z80 $60; CDC 8" SSSD $45; DG-Nova2 w/Doc $175. **Jim Carroll 615-355-1061.** 7-83

MICROFRAME SYSTEM backplane with case, fans, 200-watt power supply, $300. Wameco 8080 boards, $50. Four-slot backplanes, $50. Wameco front panel system, $75. All boards come with complete documentation, working, 90-day guarantee. **MEGATECH,** 203-634-4593, M-F, 9-5; PO Box 4213, Yalesville Station, CT 06492. We horse-trade — call or write today!

MORROW MULT-I/O Rev. 4 $60. Switchboard $50. Imsai SIO-2-2, $30. **408-423-0122.**

(131) S-50 COMPATIBLE, PERIPHERAL

5 Megabyte Hrd Disk Add-on for S-30 or SS-50 from $450 with software and interface. **Digital Search, 803-877-9444.**

COMPLETE 6809 System $500. Assortment 55-50 cards. 606-739-5430. **William Comer,** 3435 Sharon, Catlettsburg, KY 41129.

(132) HEATH COMPUTERS FOR SALE

H-100, 2-DRIVES, 192K, Amber monitor, color, technical manuals, software, Mint cond., shipping ppd. **Joe, 615-966-1195.** 11815 Autumn Leaves Ln., Knoxville, TN 37922. 10-82

Z-11 LSI-11 system, 64kb, 2 floppies, 5MB hard disk, H19 terminal, fast LA36, software, I/O cards, spares, $2000. **H89,** 64K, H77, 2 floppies, H-DOS, CP/M, software, $600. **Steve Wallin,** 400 Rover, Los Alamos, NM 87544. **505-672-1770.**

ZW-120-32 Hard disk, one floppy, 192K desktop, Z-DOS, Peachtree 5000, multiplan, Basic, all manuals, etc. **Mordant, 704-322-5794** evenings. 10-82

(132A) HEATH SOFTWARE, PERIPHERAL

5 Megabyte add-on hard Disk Subsystem for Heath-89. Kit $475. **Digital Search, 803-877-9444.**

Have you ever wanted to run a program on your H-89 and couldn't find it? Get all of your programs and disks names in alphabetical order. Send large SASE to **McNeal,** PO Box 904, Warsaw, IN 46580.7-83

(133) BURROUGHS SYSTEMS

B92C, 2MHZ Processor, 128KB mem. 120 CPS console printer. 256KB memory upgrade with operator display. 18.8 MB fixed disk drive with control AP311 remote printer. Three MT93 terminals with keyboards. Excellent condition, certified by Burroughs. **Emory Shelfer, 904-787-9169,** Leesburg, Florida.

★ ★ ★

HELP

WANTED TO BUY

Burroughs Self Scan Displays and Nixies. Call

Rondo Electronics Inc.

201-782-7814. 8-84

(134) HEWLETT PACKARD COMPUTERS FOR SALE

HP-110 PORTABLE Computer and 9114 portable DSDD 3.5" drive $1800. HP-150 Touchscreen computer with 9121 dual 3.5" drive, Thinkjet printer, 20MB Bering disc drive with 3.5" DSDD drive, Programmer's Toolkit, internal printer, and more, $4000. All original manuals and most original shipping cartons. **Coordinated Concepts, Inc.,** POB 1155, Pinellas Park, FL 34290. 813-546-8552.

★ ★ ★

HP-110 Portable cost $3000, sell $1400; HP-85 with HPIB interface, RAM upgrade and software cost $5000 sell $1950; HP Thinkjet printer $300; HP-150 with 15MB HD and $2000 software including Lotus 123, Wordstar, BPI accounting and more, cost $6000, sell $2000. Will trade. **800-826-6559** California **800-221-4821.** 9-82

HP150 system, hard disk, dual microfloppies, printer, modem. Many software packages with manuals. $3250. Call **303-593-9644.** 9-81

HP-85 EXCELLENT condition, $575. Mass storage ROM $66. 16K memory module $80. Visi-calc $75. Call **313-528-1571** or write **Terry Bannerton,** Box 1034, Troy, MI 48099.

HP86B, AP, I/O, Matrix, plotter, ROMs. CP/M, memory, CRT. 15M-Drive. Ph. **812-339-7661** or 812-335-1858. **Randy Webb,** 622 E. 11, Bloomington, IN 47401. 10-82

HP86B Demo models, with 9121 S/D 82913A, 12" CRT and 7470A-002 plotter, most like new. **Stephen Computer Services, 313-478-1868, 34700 Grand River Ave., Farmington, MI 48024.** 7-83

★ ★ ★

HP LIQUIDATION

HP 110 Portable - 256K RAM, Lotus 123, Modem/software, 16 line screen, reconditioned/tested/warrenteed by HP, 10 day return guarantee, free shipping, quantities limited. VISA/MC accepted. $859. **Tectran 1-401-467-8888.**

★ ★ ★

HP LIQUIDATION

HP 110 Portable - 256K RAM, Lotus 123, Modem/software, 16 line screen, reconditioned/tested/warrenteed by HP, 10 day return guarantee, free shipping, quantities limited. VISA/MC accepted. $859. **Tectran 1-401-467-8888.**

Hewlett Packard HP-87A Computer. Almost new condition, only $400. **Televideo** Personal Terminal, only $200. Call **Bob Thomason, 502-683-9871.** 6-82

(134A) HEWLETT PACKARD COMPUTERS WANTED

★ ★ ★

Hewlett Packard computers, printers, plotters wanted. Will pay cash or trade. **800-826-6559** California, **800-221-4821.9-82**

(134B) HEWLETT PACKARD SOFTWARE, PERIPH.

HP-150 SOFTWARE. MemoMaker new unopened $45. Personal Cardfile $45. BPI Personal Accounting $85. Both used twice. **Linton,** POB 96 Point Lookout, NY 11569. 516-431-2718.

HP-150 Software Lotus123 $250; DBasell $250; Condor3 $350; Wordstar $195; Graphics $125; PCF $50; BPI GA/INV/PR $500; Visicalc $100; Multiplan $125; Manuals $25; HP125 software Word $75; Wordstar $75; Vivicalc $100. **800-826-6559** California, **800-221-4821.** 9-82

SURPLUS SALE (Because I overbought)
Ribbon Cartridges (Hewlett-Packard #92151H m/s for Diablo 620, MemWriter 610-20-30, & HP2602A. Mint condition-original factory containers w/logo thereon. Will sell below cost w/**MGB** while supply lasts. 3/$12-$36/Dz prepaid. UPS or best offer for all. Inquiries welcome.
TOP QUALITY GENERIC RIBBONS
Everyday low prices. Diablo 630, IBM, etc. All sold w/MGB. Price list on request.
Bill Allbritton .....**(205)536-1527**
2603 Artie St., Huntsville, AL 35805.

(136) DATA GENERAL SYSTEMS

(138) DATA GENERAL, SOFTWARE PERIPH.

(148) DEC SYSTEMS FOR SALE

AMBER MONOCHROME monitor for Rainbow. Will accept any reasonable offer. **Frank Rosato,** 315-478-6681. 10-82

DEC BOARDS DEC 11/23 CPU Boards w/o Memory Management chip $300 ea.; Plessey PM-DLV11J 4 Port serial boards for Q-BUS $100 ea.. **Marshall Fletcher,** 68 Walnut Park, Rochester, NY 14622. **716-266-6760.** 9-81

NSC HYPERchannel A400

DEC to DEC CPU communications hardware. Includes (1) A400 Minicomputer Adapter, (2) P113 DEC UNIBUS Interface, (2) P117-5 Interface Expansion, (1) AC-1 Adapter Cabinet. Purchased new April, 1985. Excellent conditon. Immediate availability $25,000. **Ingersoll Rand Co.,** 942 Memorial Pkwy., Phillipsburg, NJ 08865. **Pete D'Souza, 201-859-7379.** 9-83

PDP 11/23 system 256KB 20 of 20.8MB disks excellent condition under Digital maintenance original user 1982 price $4,500 or best offer. Call **312-341-0101.** 7-84

(149) DEC SYSTEMS WANTED

(150) DEC SOFTWARE, PERIPHERAL

VT100/VT220 Terminals. VT 122 $449/each w/90 day warranty, quantity pricing available. **Digital Search, 803-877-9444.**

(154) IBM SYSTEMS FOR SALE

★ ★ ★

HP LIQUIDATION

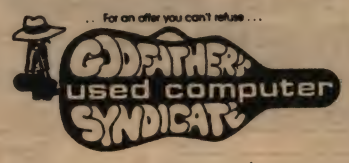
HP 110 Portable - 256K RAM, Lotus 123, Modem/software, 16 line screen, reconditioned/tested/warrenteed by HP, 10 day return guarantee, free shipping, quantities limited. VISA/MC accepted. $859. **Tectran 1-401-467-8888.**

IBM 5120 Computer, 2 disk drives and printer. Credit Union Software included. Excellent condition. $2,000 or best offer. **304-863-7567.** 9-81

★ ★ ★

System/23- Excellent condition, three computers, hard disk, Printer w/switch, all manuals. Software available w/support. **318-425-4337.** 9-81

(155) IBM SYSTEMS WANTED



$$$$ I Buy, Sell, & Trade IBM PC's. See ad this issue for new 'AT' Clones. Check index in front. **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**

(156) IBM SOFTWARE PERIPHERAL

Bible KJV NT on floppies, send $24.95 to **J. Wood,** 46 Circle Dr. West, Montgomery, IL 60538. 10-82

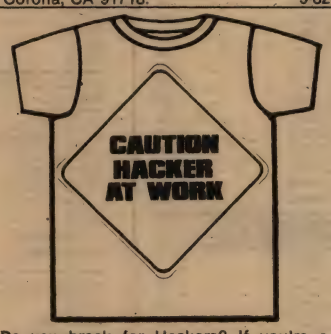
IBM PUBLIC DOMAIN

SEND FOR FREE LIST. We have games, databases, spreadsheets, graphics, inventory control, budget programs, and lost more for business, or home. Only $3.00 a disk. Also blank disks 5¼ DSDD in packs of $0 $.99 per disk. **JDX Disk Copy Service,** PO Box 1561, Corona, CA 91718. 8-82

★

IBM PUBLIC DOMAIN SOFTWARE

Send for free list. We have games, databases, spreadsheets, graphics, inventory control, budget programs, checking, and finances, for home or business. We have no junk, just the best of the Public domain programs. $3.00 per disk. Give us a try now. **JDX Disk Copy Service,** PO Box 1561, Corona, CA 91718. 9-82



Do you break for Hackers? If you're a Hacker, get the repect you deserve when you wear this shirt. Only $8.50. Others available in display ad this issue. Add $1.50 ship/H (50¢ add'l each shirt), Specify S-M-L-XL to: **TECH STYLES,** Dept. CS10, Box 1877, Winter Haven, FL 33882-1877.

MSDOS and Xenix software and languages available for IBM and compatibles. Send SASE for complete list. **Rob Lee,** 25 Amaryllis Ave., Waterbury, CT 06710.10-84

PCJr Owners for Sale Internal Modem $50; Serial adapter cable $10; IBM Joysticks $20; Like new, sealed boxes. **Lance 914-779-4925.** 10-82

RENT AND COPY
IBM PUBLIC DOMAIN
$1 PER DISKFULL!

Rent the Best of the Public Domain or use our low cost copy service! Fast Service-Credit cards accepted-Moneyback Guarantee! Send #10 SASE for details (Specify Computer): **Futuresystems,** Box 3040(C), Vista, CA. 92083. - 24 hour recorded info/order: **619-941-3244.**

Unprotect Basic Programs list, edit, save as desired. Simple instructions, examples. MS/DOS-PC/DOS $20. **Greentree Computers,** 596-A N. Mobil Ave., Camarillo, CA 93010. 10-83

(166) MISC. (HARDWARE & SOFTWARE)

CLONE COMPONENTS CHEAP. **B Systems,** 3228 S. Blvd. #171, Edmond, OK 73013. 405-341-7437. 9-84

C TOOLS for Professionals. **B Systems,** 3228 S. Blvd. #171, Edmond, OK 73013. 405-341-7437. 9-84

★ ★ ★

MUSYS 8816

Wanted for spare parts. Any information on support for this orphan would be greatly appreciated. **1-800-327-6835.** 9-81

SHARP PC-1500 Handheld Pocket Computer Unused like new complete $85. **Linton,** POB 96, Point Lookout, NY 11569. **516-431-2718.**

Wanted: Software that makes printout of "A Day in History" or similar. Send sample to **David Warner,** 41 Elmwood Drive, Livingston, NJ 07039.

★ ★ ★

HELP

WANTED TO BUY

Burroughs Self Scan Displays and Nixies. Call

Rondo Electronics Inc.

201-782-7814. 8-84

(172) DISK DRIVES

10 Megabyte hard disk: Seagate 212, with Adaptec controller and cables. $100. Call **Gretchen at 707-823-0904 or 823-6731** (message).

2.5 MB for IBM PC

Diskdrives. 2-8 inch DSDD Shugart 860-1 in case with power supply, disk controller for 2-8 and 2-5 inch drives, software, cables, instructions, and 120 DSDD Dysen 8 inch disks (most unused) Price $875. Telephone **315-337-5714, 315-339-0800.**

2 Tandon TM848-2, 8 inch DSDD drives like new $125 each; Also two Tandon TM-100 5¼ inch drives SSDD $50 each; Also other equipment too numerous to list. **Call 412-489-4820** and ask for **Scott.** 9-81

3.5" Epson drives--Epson SMD-130. Double density, single sided $35/ea. **AIC,** 2600 Mar Vista Drive, Aptos, CA 95003. **408-688-5000, 800-242-7776.** 8-90

5¼" Hard disk drives, ST412 (10 MEG) $175; Tandon TM502 (10 MEG) $165, for IBM PC-XT; Seagate ST4026 (20 MEG) $375, for IBM AT; Streaming tape backup drives Wangter $275; Archive $325. Call **ERD Systems, Inc., Ed Lewis, 617-452-6000, 617-851-5852. 9-81**

★ ★ ★

70MB 5¼" Winchester disk drives. $900 each/best offer. Tested before shipment. Call **Lee 619-270-1994.**

8" Hard disk drives, Quantum Q2030 (30 Meg) $100; Q2020 (20 Meg) $75; Shugart SA 1106 (30 meg) $75; SA 1004 (10 MEG) $60. In quantity prices negotiable call **ERD Systems, Inc., Ed Lewis, 617-452-6000 or 617-852-5852.** 9-81

8" SSSD Drives $75; Can be used as Double Density. Removed from operational equipment. Shugart 8" 50 Hz, 220V conversion kits available. **Digital Search, 803-877-9444.**

CLEARANCE SALE of all 5¼" drives, working and non-working, from $5-$35. Please call or write for availability and type. Shugart SA300's: 3½", 500K drives; same interface as 5¼"; brand new, $75. **MEGATECH,** 203-634-4593, M-F, 9-5; PO Box 4213, Yalesville Station, CT 06492. We horse-trade — call or write today!

Cabinet for two 8 inch wide style Shugart drives. Fan, all AC and DC wiring with

314 N. Central Ave.
Duluth, MN 55807
218-624-5749
SURPLUS ELECTRONICS
Disk Drives (Equip. Take Outs)
8" Shugart Model 800 only **$25.00**
5¼" Control Data Dbl-Side Full Ht. 96-TPL Mod. BRBB2A ID-77711501
5¼ Tandon Disk Drives TRS-80 Model 3-4 Compatible **$39.00**
8" Disk Drive Cabinets **New** with power supply and fan **$29.00**
Modems Hayes Compatible (Trade Ins)
Motorola 212A RS232 Conn. 300-1200 Baud **$69.00**
MUFFIN FANS (New)
12 Volt 2" — **$7.00**
115 Volt 3" — **$5.00**
115 Volt 4" **$6.00**
Ask about Mini Catalog—Many other items
Add 10% Shipping & Handling—Please

Mail Order Electronics · Worldwide

Jameco ELECTRONICS

Mail-Order Electronics 415-592-8097

7400

Part No.	Price	Part No.	Price
SN7400N	.19	SN7485N	.55
SN7402N	.19	SN7486N	.35
SN7404N	.25	SN7489N	1.95
SN7405N	.29	SN7490N	.39
SN7406N	.29	SN7493N	.35
SN7407N	.29	SN74121N	.29
SN7408N	.25	SN74123N	.49
SN7410N	.19	SN74125N	.45
SN7414N	.45	SN74126N	.49
SN7416N	.35	SN74143N	3.95
SN7417N	.35	SN74150N	1.29
SN7420N	.19	SN74154N	1.25
SN7430N	.19	SN74158N	1.39
SN7432N	.29	SN74173N	.75
SN7438N	.29	SN74174N	.59
SN7442N	.45	SN74175N	.59
SN7445N	.69	SN74176N	.89
SN7446N	.79	SN74181N	1.95
SN7447N	.79	SN74189N	1.95
SN7448N	.79	SN74193N	.69
SN7472N	.39	SN74198N	1.35
SN7473N	.35	SN74221N	.89
SN7474N	.35	SN74273N	1.95
SN7475N	.39	SN74365N	.59
SN7476N	.35	SN74367N	.59

74LS

74LS00	.19	74LS165	.79
74LS02	.19	74LS166	.89
74LS04	.25	74LS173	.49
74LS05	.25	74LS174	.39
74LS06	.99	74LS175	.39
74LS07	.99	74LS189	3.95
74LS08	.19	74LS191	.49
74LS10	.19	74LS193	.69
74LS14	.39	74LS221	.59
74LS27	.25	74LS240	.69
74LS30	.19	74LS243	.69
74LS32	.25	74LS244	.69
74LS42	.39	74LS245	.79
74LS47	.89	74LS259	1.19
74LS73	.35	74LS273	.79
74LS74	.25	74LS279	.39
74LS75	.29	74LS322	2.95
74LS76	.29	74LS365	.39
74LS85	.49	74LS366	.39
74LS86	.25	74LS367	.39
74LS90	.39	74LS368	.39
74LS93	.39	74LS373	.79
74LS123	.49	74LS374	.79
74LS125	.39	74LS393	.79
74LS138	.39	74LS590	5.95
74LS139	.39	74LS624	1.95
74LS154	1.49	74LS629	2.49
74LS157	.35	74LS640	.99
74LS158	.35	74LS645	.99
74LS163	.49	74LS670	.99
74LS164	.49	74LS688	1.95

74S/PROMS*

74S00	.29	74S188*	1.75
74S04	.35	74S189	1.95
74S08	.35	74S196	1.49
74S10	.29	74S240	1.49
74S32	.35	74S244	1.49
74S74	.49	74S253	.79
74S85	1.49	74S287*	1.69
74S86	.35	74S288*	1.69
74S124	2.75	74S373	1.69
74S174	.79	74S374	1.69
74S175	.79	74S472*	3.49

74ALS

74ALS00	.35	74ALS138	.89
74ALS02	.35	74ALS174	.89
74ALS04	.39	74ALS175	.89
74ALS08	.35	74ALS240	1.79
74ALS10	.35	74ALS244	1.79
74ALS27	.39	74ALS245	2.49
74ALS30	.35	74ALS373	1.95
74ALS32	.39	74ALS374	1.95
74ALS74	.55	74ALS573	1.95

74F

74F00	.59	74F139	1.29
74F04	.65	74F157	1.29
74F08	.59	74F193	4.95
74F10	.59	74F240	2.49
74F32	.65	74F244	2.49
74F74	.69	74F253	1.79
74F86	.89	74F373	2.95
74F138	1.19	74F374	2.95

CD—CMOS

CD4001	.19	CD4081	.25
CD4011	.19	CD4082	.25
CD4013	.35	CD4093	.39
CD4016	.29	CD4094	1.49
CD4017	.49	CD40103	2.95
CD4018	.69	CD4503	.49
CD4020	.59	CD4510	.69
CD4024	.49	CD4511	.69
CD4027	.39	CD4515	1.39
CD4030	.39	CD4518	.79
CD4040	.65	CD4520	.79
CD4049	.29	CD4522	.79
CD4050	.29	CD4538	.89
CD4051	.65	CD4541	.89
CD4052	.65	CD4543	.99
CD4053	.65	CD4553	4.95
CD4059	3.49	CD4555	.89
CD4060	.89	CD4566	1.95
CD4066	.29	CD4583	1.19
CD4069	.25	CD4584	.59
CD4070	.29	CD4585	.75
CD4071	.25	MC14411	9.95
CD4072	.25	MC14490P	4.49
CD4076	.89	MC14572	.89

COMMODORE CHIPS

For VIC-20, C-64 and C-128 Personal Computers

Part No.	Price	Part No.	Price	Part No.	Price
6502 MPU w/Clock	2.75	6529SPI	7.95	6581SID	19.95
6507 8-Bit CPU	6.95	6551ACIA	3.95	*82S100PLA	19.95
6508 w/RAM & I/O	14.95	6560VIC-I	14.95	8701 Clock Chip	9.95
6510CPU	9.95	6567VIC-II	19.95	*8721PLA	14.95
6525TPI	9.95	6569VIV	19.95	NOTE: 82S100 = U17 (C-64)	
6526CIA	14.95	6572	19.95	*No Spec Available	

NEC V20 & V30 CHIPS

Replace the 8086 or 8088 in Your IBM-PC and Increase Its Speed by up to 40%!

Part No.	Price
UPD70108D-5 (5MHz) V20 Chip (Replaces the 8088)	$ 8.95
UPD70108D-8 (8MHz) V20 Chip (Replaces the 8088-2)	$10.95
UPD70116D-8 (8MHz) V30 Chip (Replaces the 8086 or 8086-2)	$11.95

MICROPROCESSOR COMPONENTS

MICROPROCESSOR CHIPS Part No.	Price
D765AC	4.95
CDP1802CE	6.95
2661-3	6.95
Z80, Z80A, Z80B, SERIES	
Z80	1.75
Z80-CTC	1.79
Z80-DART	4.95
Z80-PIO	1.79
Z80A	1.85
Z80A-CTC	1.89
Z80A-DART	5.25
Z80A-PIO	1.95
Z80A-SIO/0	5.25
Z80B	3.95
Z80B-CTC	4.95
Z80B-PIO	4.95
6500/6800/68000 SER.	
6502	2.75
65C02 (CMOS)	10.95
6520	2.95
6522	4.95
6532	6.49
6551	3.95
6800	1.95
6802	4.95
6810	1.95
6821	1.95
6840	6.75

6500/6800/68000 Cont. Part No.	Price
6843	9.95
6845	4.95
6850	1.95
6852	4.75
68000L8	9.95
68661	8.95
8000 SERIES	
8031	6.95
80C31BH	19.95
8035	1.95
8073N	29.95
8080A	3.95
8085A	2.75
8086	8.95
8086-2	10.95
8087 (5MHz)	129.95
8087-2 (8MHz)	159.95
8088	7.95
8088-2	9.95
8116	8.95
8155	2.75
8155-2	3.95
8156	2.75
8202	9.95
8203	24.95
8212	1.95
8224	2.25
8228	3.49

8000 SERIES Cont. Part No.	Price
8237-5	6.95
8243	2.49
8250A	6.95
8250B (For IBM)	7.25
8251A	2.25
8253-5	2.25
8254	9.95
8254-2	11.95
8255A-5	2.25
8257-5	2.49
8259-5	2.49
8272	4.95
8279-5	2.95
8741	8.95
8748	7.95
8749	9.95
8751	38.95
8755	14.95
DATA ACQUISITION	
ADC0804	3.49
ADC0808	8.95
ADC0809	3.95
ADC0816	14.95
ADC0817	8.95
DAC0808	1.95
DAC1008	7.95
AY-3-1015D	4.95
AY-5-1013A	3.95

DYNAMIC RAMS

Part No.	Function		Price
4116N-15	16,384 x 1	(150ns)	.89
4128 (Piggyback)	131,072 x 1	(200ns)	5.95
4164N-150	65,536 x 1	(150ns)	1.25
4164N-200	65,536 x 1	(200ns)	1.15
TMS4416-12	16,384 x 4	(120ns)	4.95
MM5280	4096 x 1	(200ns) 2107	1.95
8118	16,384 x 1	(120ns)	.69
41256-150	262,144 x 1	(150ns)	2.95
50464-15	65,536 x 4	(150ns) (4464) (41464)	4.95

STATIC RAMS

TMM2016-12	2048 x 8	(120ns)	1.69
2102	1024 x 1	(350ns)	.89
2102-2L	1024 x 1	(250ns) LP. (91L02)	1.49
2114N	1024 x 4	(450ns)	.99
2114N-L	1024 x 4	(450ns) LP.	1.09
2114N-2	1024 x 4	(200ns)	1.05
2114N-2L	1024 x 4	(200ns) LP.	1.49
21C14	1024 x 4	(200ns) (CMOS)	.49
2149	1024 x 4	(45ns)	4.95
5101	256 x 4	(450ns) CMOS	3.95
HM6116P-3	2048 x 8	(150ns) CMOS	1.45
HM6116LP-3	2048 x 8	(150ns) LP. CMOS	1.49
HM6264P-12	8192 x 8	(120ns) CMOS	3.49
HM6264LP-12	8192 x 8	(120ns) LP. CMOS	3.95
HM6264P-15	8192 x 8	(150ns) CMOS	3.29
HM6264LP-15	8192 x 8	(150ns) LP. CMOS	3.49
6514	1024 x 4	(350ns) CMOS (UPD444C)	4.49

PROMS/EPROMS

1702A	256 x 8	(1μs)	5.95
TMS2516	2048 x 8	(450ns) 25V	4.95
TMS2532	4096 x 8	(450ns) 25V	5.95
TMS2564	8192 x 8	(450ns) 25V	8.95
2708	1024 x 8	(450ns)	3.49
TMS2716	2048 x 8	(450ns) 3 voltage	9.95
2716	2048 x 8	(450ns)	3.25
2716-1	2048 x 8	(350ns) 25V	4.95
27C16	2048 x 8	CMOS	6.49
2732	4096 x 8	(450ns)	3.75
2732A-20	4096 x 8	(200ns) 21V	3.95
2732A-25	4096 x 8	(250ns) 21V	3.49
2732A-45	4096 x 8	(450ns) 21V	3.29
27C32	4096 x 8	CMOS	6.49
2758	1024 x 8	(450ns) Single +5V	2.95
2764-20	8192 x 8	(200ns) 21V	3.95
2764-25	8192 x 8	(250ns) 21V	3.49
2764A-25	8192 x 8	(250ns) 12.5V	3.25
2764-45	8192 x 8	(450ns) 21V	3.25
27C64	8192 x 8	CMOS 21V	4.95
27128-25	16,384 x 8	(250ns) 128K 21V	3.25
27128A-25	16,384 x 8	(250ns) 12.5V	4.95
27256-25	32,768 x 8	(250ns) 256K (12.5V)	5.95
27C256-25	32,768 x 8	(250ns) 256K (CMOS) (12.5V)	8.95
27512-25	65,536 x 8	(250ns) 512K (12.5V)	24.95
68764	8192 x 8	(450ns) 25V	15.95
68766	8192 x 8	(350ns) 25V	16.95
74S387	256 x 4	PROM O.C.	1.69
74S471	256 x 8	PROM T.S.	4.95
82S123	32 x 8	PROM T.S.	2.95

LOW PROFILE (TIN) SOCKETS

Part No.	1-9	10-99	100-up
8 pin LP.	.13	.12	.11
14 pin LP.	.15	.13	.11
16 pin LP.	.17	.15	.13
24 pin LP.	.31	.30	.29
28 pin LP.	.39	.37	.35
40 pin LP.	.49	.46	.43

WIRE WRAP SOCKETS (GOLD) LEVEL #3

Part No.	1-9	10-99	100-up
8 pin WW.	.55	.49	.45
14 pin WW.	.69	.65	.59
16 pin WW.	.75	.69	.65
24 pin WW.	1.19	1.09	.99
28 pin WW.	1.39	1.29	1.19
40 pin WW.	1.79	1.69	1.59

— SOLDERTAIL STANDARD (GOLD & TIN) AND HEADER PLUG SOCKETS ALSO AVAILABLE —

SATELLITE TV DESCRAMBLER CHIP

The MM5321 is a TV camera sync generator designed to supply the basic sync functions for either color or monochrome 525 line/60Hz interfaced and camera video recorder applications. COLOR BURST GATE & SYNC ALLOW STABLE COLOR OPERATION

MM5321 . . . . . $9.95

DIGITALKER™

DT1050 — Applications: Teaching aids, appliances, clocks, automotive, telecommunications, language translations, etc. The DT1050 is a standard DIGITALKER kit encoded with 137 separate and useful words, 2 tones, and 5 different silence durations. The words and tones have been assigned discrete addresses, making it possible to output single words or words concatenated into phrases or even sentences. The "voice" output of the DT1050 is a highly intelligible male voice. **The DT1050 consists of a Speech Processor Chip, MM54104 (40-pin) and two (2) Speech ROMs MM52164SSR1 and MM52164SSR2 (24-pin) along with a Master Word list and a recommended schematic diagram on the application sheet.**

Part No.	Description	Price
DT1050	Digitalker™	$24.95

DT1057 - Expands the **DT1050** vocabulary from 137 words to over 250 words. Includes two (2) ROMs and specs.

DT1057 . . . . . $11.95

INTERSIL

Part No.	Price	Part No.	Price
FE0202D	12.95	7211IPL (TTL)	7.95
FE0203D	12.95	7211MIPL (Micro)	8.49
7106CPL	8.95	7216CIJI	26.49
7106EV/Kit	46.95	7216DIPI	21.49
7107CPL	8.95	7217IJI	10.95
7107EV/Kit	46.95	7217AIPI	8.95
7207AIPD	5.95	7224IPL	10.95
7207AEV/Kit	8.49	7226AEV/Kit	99.95

74HC Hi-SPEED CMOS

74HC00	.35	74HC175	.89
74HC02	.39	74HC221	1.95
74HC04	.39	74HC240	1.39
74HC08	.39	74HC244	1.49
74HC10	.39	74HC245	1.59
74HC14	.59	74HC253	.79
74HC30	.39	74HC259	1.19
74HC32	.45	74HC273	1.79
74HC74	.45	74HC373	1.49
74HC75	.69	74HC374	1.49
74HC76	.69	74HC393	1.19
74HC85	1.19	74HC595	1.95
74HC86	.59	74HC688	1.95
74HC123	1.19	74HC4040	1.19
74HC125	.99	74HC4049	.79
74HC132	.79	74HC4050	.79
74HC138	.79	74HC4060	1.19
74HC139	.79	74HC4511	1.95
74HC154	1.95	74HC4514	2.95
74HC163	.89	74HC4538	1.95
74HC174	.89	74HC4543	2.95

74C—CMOS

74C00	.29	74C174	.89
74C02	.29	74C175	.89
74C04	.25	74C221	1.19
74C08	.35	74C240	1.59
74C10	.29	74C244	1.59
74C14	.49	74C373	1.95
74C32	.35	74C374	1.95
74C74	.49	74C912	7.95
74C85	1.19	74C915	1.19
74C86	.29	74C920	9.95
74C89	3.95	74C921	9.95
74C90	.89	74C922	3.95
74C154	2.95	74C923	3.95
74C173	.89	74C925	4.95

LINEAR

DS0026CN	1.69	LF411CN	.79
TL074CN	.79	TL497ACN	2.19
TL084CN	1.09	NE540H (C540H)	2.95
LM307CN	.45	NE555V	.29
LM309K	1.25	XR-L555	.69
LM311CN	.45	LM556N	.59
LM317T	.99	NE558N	1.19
LM318CN	1.19	LM565N	.99
LM319N	1.19	LM567V	.89
LM320K-5	1.35	NE592N	.89
LM320T-5	.59	LM741CN	.29
LM323K	4.49	LM747N	.59
LM324N	.39	MC1377P	3.15
LM338K	3.95	MC1398P	8.95
LM339N	.49	LM1458CN	.49
LM340K-5	1.35	LM1488N	.69
LM340K-12	1.35	LM1489N	.69
LM340K-15	1.35	LM1496N	.99
LM340T-5	.49	LM1871N	1.95
LM340T-12	.49	LM1872N	2.49
LM340T-15	.49	LM1896N	1.59
LF347N	.99	ULN2003A	.99
LM348N	.69	XR2206	3.95
LF351N	.49	XR2211	2.95
LF353N	.59	LM2907N	1.95
LF355N	.89	LM2917N (8 pin)	1.55
LF356N	.89	CA3240E	1.49
LM358N	.49	LM3900N	.59
LM360N	2.19	LM3905CN	1.19
LM361N	1.59	LM3909N	.89
LM380CN	1.09	LM3914N	1.95
LM386N-3	.89	LM3916N	1.95
LM387N	.99	NE5532	.99
LM393N	.45	NE5534	.89
LM399H	3.95	75477	1.19
		76477	3.95

PARTIAL LISTING • OVER 4000 COMPONENTS AND ACCESSORIES IN STOCK! • CALL FOR QUANTITY DISCOUNTS

Worldwide • Since 1974

• QUALITY COMPONENTS • COMPETITIVE PRICING • PROMPT DELIVERY

Mail Order Electronics • Worldwide
Jameco ELECTRONICS

COMMODORE® COMPATIBLE ACCESSORIES

Now Compatible With C-128!

RS232 Adapter for VIC-20, C-64 and C-128

The JE232CM allows connection of standard serial RS232 printers, modems, etc. to your VIC-20, C-64 (excluding the SX-64 Portable), and C-128. A 4-pole switch allows the inversion of the 4 control lines. Complete installation and operation instructions included.

• Plugs into User Port • Provides Standard RS232 signal levels • Uses 6 signals (Transmit, Receive, Clear to Send, Request to Send, Data Terminal Ready, Data Set Ready).

JE232CM. $39.95

Voice Synthesizer VIC-20 & C-64
Plug-In — Talking in Minutes!
JE520CM. $99.95

External Power Supply
CPS-10 (For C-64). **$39.95**

Parallel Printer Interface
2K Buffer, Expandable to 10K!
MW350 (For VIC-20, C-64 & C-128). **$54.95**

TRS-80® COMPATIBLE ACCESSORIES

E-X-P-A-N-D TRS-80 MEMORY
All kits come complete with documentation

TRS-80 MODEL I, III
TRS-16K3 200ns (Model III). $5.95
TRS-16K4 250ns (Model I). $5.49

TRS-80 COLOR AND COLOR II
TRS-64K-2. . . . . $11.95
New models only —
TRS-CoCo-Incl. 2-50464's (41464's). . . . $12.49

TRS-80 MODEL 4, 4P
TRS-64K-2. . . . . $11.95
Expands Model 4 from 16K-64K or Model 4P from 64K-128K
TRS-64K-2PAL. $29.95
Expands Model 4 from 64K to 128K

TRS-80 Model 100 • NEC • Olivetti
M1008K. . . . . $24.95 ea. or 3 for $59.95
TRS-80 Model 100 Expansion
NEC8KR. . . . . $24.95 ea. or 3 for $59.95
NEC Model PC-8201A Expansion
OM108K. . . . . $24.95 ea. or 3 for $59.95
Olivetti Model M10 Expansion

TANDY 200
M200R. . . . . $74.95 ea. or 2 for $129.95
Tandy Model 200 Expansion

UV-EPROM ERASER

Erases all EPROMs. Erases up to 8 chips within 21 minutes (1 chip in 15 minutes). Maintains constant exposure distance of 1". Special conductive foam liner eliminates static build-up. Built-in safety lock to prevent UV exposure. Compact - 9.00"L x 3.70"W x 2.60"H. Complete with holding tray for 8 chips.

DE-4 UV-EPROM Eraser. . . . **$74.95**
UVS-11EL Replacement Bulb. . . . **$17.95**

DATA BOOKS

30003 National Linear Data Book (82). $14.95
30009 Intersil Data Book (85). . . . . $ 9.95
30013 Zilog Data Book (85). $14.95
30032 National Linear Supplement (84). . . . . $ 6.95
210830 Intel Memory Handbook (86). $17.95
230843 Intel Microsystem Hndbk. Set (86). . . . $24.95

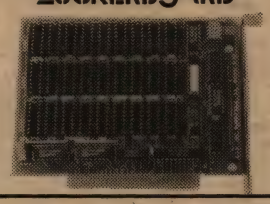
MUFFIN/SPRITE-STYLE FANS

MUF60 (SPN3-15-2462) **$9.95**
Howard Industries (4.68" sq., 60 cfm)
SU2C7. . . . . **$9.95**
EG&G Rotron (3.125" square, 20 cfm)

NEW PRODUCTS!

DISK DRIVE SALE!

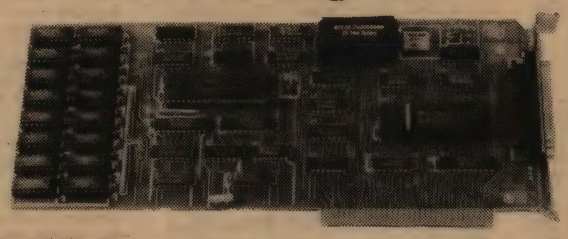
MPI52S Double-sided 48TPI. . . *IBM PC/XT Compatible!* . . **$89.95**
TM100-4 Double-sided 96TPI. . . *QUAD Drive!* **$59.95**



Expansion Memory Half-Card for IBM-PC, XT, Portable, Tandy 1200 and Compatible Computers

Expand your computer to its full capacity of 640K. It will accept either 64K memory chips (4164) or 256K memory chips (41256).

EM-100 Expansion Memory Half Card with 0K RAM . . . **$59.95**
EM-D RAM Disk and Printer Spooler Software. . . . **$39.95**



Multifunction Board with Clock Calendar for the Tandy 1000

The **Zuckerboard Multifunction Board** allows you to expand the memory on your Tandy 1000 to as much as 640K. The Multifunction Board comes complete with an RS232 port for your serial expansion needs, a clock/calendar and RAM Disk Printer Spooler. The Zuckerboard Multifunction Board is made in the U.S.A. and comes with a standard 2 year warranty.

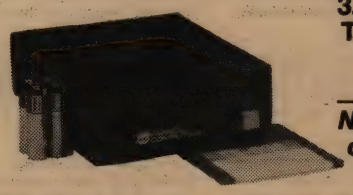
MTAN-256K Includes 256K RAM and Manual. **$199.95**
MTAN-512K Includes 512K RAM and Manual. **$239.95**

Expansion Memory Half-Card and Clock/Calendar for the Tandy 1000 — *DMA Controller Chip on board!*

TAN-EM256K Includes 256K RAM and Manual. . . . . **$ 99.95**
TAN-EM512K Includes 512K RAM and Manual. **$139.95**

Options for TAN-EM256K/512K

TAN-C Includes Plug-in Clock Option Chip (only). **$39.95**
TAN-D Includes RAM Disk Spooler Software (only). **$39.95**



3.5" Micro Floppy Disk Drive for Tandy 100 & 200, NEC8201A, IBM PC, XT, AT and Compatible Computers

Now your IBM PC or compatible can read and write the same disks as your portable!

FD-103 Includes 3.5" Disk Drive, Cable, AC Adapter, Blank Diskette and Documentation. . . . **$179.95**

Software for the FD-103 Disk Drive (Software needed for operation)

TS1 Tandy 100 TSDOS Disk Operating System Software. **$49.95**
TS2 Tandy 200 TSDOS Disk Operating System Software. **$49.95**
TSN NEC PC8201A Disk Operating System Software. **$49.95**
LAPDOS IBM PC, XT, AT and Compatible LAPDOS Disk Operating System Software. **$79.95**

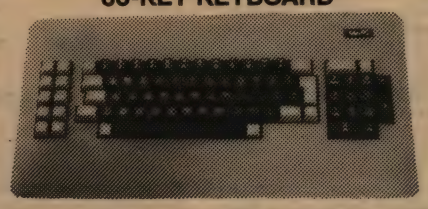
13" Color Composite Monitor for VIC-20 and C-64
Also compatible with other computers with composite output (i.e. Apple II, II+, *IIe)**

Ideal for color graphics and games
• Resolution: 260H x 300V • Recommended Display Character Number: 960 Characters (40 Characters x 24 Rows on 5x7 Dot Matrix) • CRT: 13" diagonal • Size: 14.6"W x 13.5"H x 15.5"D • Weight: 25.3 lbs.

CMON. . . . . $129.95 each or 2/$219.95
RCA-3-DIN (Universal Computer to Monitor Cables for Atari, Commodore & TI). . . . **$3.49**

IBM® COMPATIBLE ACCESSORIES

83-KEY KEYBOARD



• Identical layout as original IBM PC Keyboard • Highly desirable case with palm rest • Complete with cable and data • *JUST PLUG IN!*

KB83. . . . . *SALE* $29.95

Build an IBM PC/XT™ Compatible!

IBM-64K(2) 64K RAM Chips (18). . . . . $ 24.98
KB-83 83-Key Keyboard. . . . . $ 29.95
IBM-FCC Floppy Controller Card. . . . $ 49.95
IBM-Case Case. . . . . $ 49.95
IBM-MCC Monochrome Card. . . . . $ 79.95
IBM-PS Power Supply. . . . . $ 79.95
FD55B Disk Drive. $119.95
IBM-MON Monochrome Monitor. . . . $ 99.95
IBM-MB Motherboard. $139.95
Regular List $674.58

IBM™-Special (Incl. 9 items above) . . **$599.95**

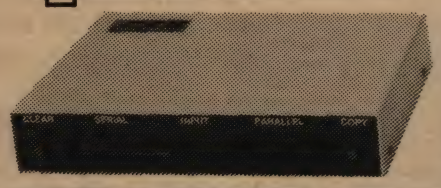
Additional Add-Ons Available!

IBM-KB 83-Key Keyboard. . . . . $ 69.95
IBM-ENH Enhanced Keyboard. . . . . $ 99.95
IBM-ICB Integrated Color Board . . . $ 99.95
IBM-EGA Enhd. Graphics 256K RAM . . $299.95
IBM-20MBK 20MB Hard Disk Drive. . . . $499.95

IBM is a registered trademark of IBM Computers

NEW! Universal 64K/256K Printer Buffer NEW!

JOHNATHON FREEMAN DESIGNS



The **UBUFFER Universal Printer Buffer** is a hi-speed data buffer that accepts data at a high rate, and then outputs this data to your printer. You save valuable computer time. The UBUFFER can be connected to practically any computer or printer. There are four possible combinations: 1) Serial to Serial, 2) Serial to Parallel, 3) Parallel to Parallel, 4) Parallel to Serial. Manual included. Size: 9-1/3"L x 4⅛"W x 1½"H

UBUFFER-64K . . . $199.95
UBUFFER-256K . . $229.95

***IBM Compatible!* DISK DRIVES**
Documentation Included

FD55B Teac 5¼" DS ½-Height. **$119.95**
SA455 Shugart 5¼" DS ½-Height. **$119.95**
TM100-2 Tandon 5¼" DS Full-Height. . . . **$109.95**

JMR 5¼" DISK DRIVE ENCLOSURES
Complete with power supply, switch, power cord, fuseholder and connectors.

DDE-1FH. **$69.95**
Houses 1 Full-Height 5¼" Floppy Drive.
DDE-2HH. **$79.95**
Houses 2 Half-Height 5¼" Floppy Drives — Vertical
HDDE-1FH. **$199.95**
Houses 1 Hard Disk Drive

$20 Minimum Order — U.S. Funds Only
Shipping: Add 5% plus $1.50 Insurance

California Residents: Add 6% or 6½% Sales Tax

Spec. Sheets — 50¢ each
Prices Subject to Change

Send stamped, self-addressed envelope to receive a Quarterly Sales Flyer — FREE!

10/86

MasterCard

Mail Order Electronics • Worldwide
Jameco ELECTRONICS®

VISA®

Send $1.00 Postage for a FREE 1986 JAMECO CATALOG

©1986 Jameco Electronics

1355 SHOREWAY ROAD, BELMONT, CA 94002 • *PHONE ORDERS WELCOME 415-592-8097 Telex: 176043*

power supply $100. **Cascade Electronics Inc.**, Route 1, Box 8, Randolph, MN 55065. **507-645-7997.**

Corvus hard disk periphery: VHS mirror BK-up. Retail $900. Ten Apple Constellation One network boards. Retail $400 each. Taking best offers! Call **415-456-1577.** 7-82

Disk Drive Manual - Only $3 (Regularly $10). Maintain, repair (troubleshoot, align, adjust, etc.) floppies without special equipment, software! **Automatic Teller Machines - Only $3** (Regularly $15). ATM operation, security, crimes. **Super Survival Catalot ($1)** - eighty publications - computers, electronics, security, energy, weapons, financial, medical. **Consumertronics,** 2011 Crescent, Alamogordo, NM 88310. 9-82

Disk Drives IBM Compatible DS/DD Full Height 5¼ MPI Model/52SA $29 each; Also 256k-150ns DRAM in stock. Available in stock, immediate delivery, a good amount of unused Floppy Disk-Drives. Although Relatively new these drives are sold as is. Subject to prior sale required. For more information call us immediately with your requirements. Offer only good until all products are disperse. **Selectronix,** 19142 Van Ness Ave., Torrance, CA 90501. Tel: **213-320-8990.** 9-83

Innovex 200 8" SSSD Drives, excellent quality. Can be used double density. 4 for $100. Complete, but require alignment or adjustment. **Digital Search, 803-877-9444.**

Micro-floppy 3½" drives. 500k bytes Shugart SA300 $90 each or used 2 for $75. NEC FD-1035, DSDD (1 meg) w/warranty - $175 each. Same interface as 5¼" drives. **Digital Search, 803-877-9444.**

PCjr Impulse memory expansion, 640K $299; Hard disk for PCjr $699 complete. Specializing in PCjr add-ons. Send SASE for info. **Paul Rau Consulting,** 260 N. Lincoln Way, Galt, CA 95632. 9-82

PERSCI 299-B reconditioned, 30-day warranty $295; As-Is, no missing parts, $95. **ADX,** PO Box 24168, Lyndhurst, OH 44124. **216-486-2888.** 10-86

★ ★ ★

Panasonic JA455 5¼" DS/DD ½ht. $109; Shugart SA800-2 wide frame $59; Shugart SA850 wide frame $79; Tandon 848-2 $99; Tandon 100-1 (new) $70; Tandon 100-2 $75; MPI 52S $55; IBM floppy controller with cable $49; Sixty day warranty-shipping extra. Documentation included. **LDL Electronics,** 13392 158 St. N., Jupiter, Fl 33478. **305-747-7384**-See showcase ad for drive servicing. 10-82

Priam 144Mb HD Model No. 15450-20 $1000; DAVONG external 15Mb harddrive w/software, documentation, host adaptors and cables, new $400; DAVONG HD controller card for PC w/external power supply & cables $100; same type card from Datamac $35; External HD power supply, case w/fan, like new $75. 4615 Orleans Blvd., Jefferson, LA 70121. **504-733-9611.** All add-post.

SA850 disk drive removed from service. 90 day guarantee $69. **Cascade Electronics Inc.,** Route 1, Box 8, Randolph, MN 55065.

ST506 Winchester Controller Kit. $200. SA1002 8" Hard Disk Controller also available. **Digital Search, 803-877-9444.**

Seimens 8" FDD-200 DSDD drive 1.2 M. $75 or best offer. Call **Gretchen at 707-823-0904** or **823-6731** (message).

Winchester Drive Sale. Shugart SA1002. 8" - 5 megabytes, 2 for $100, controller kit $200. **Digital Search, 803-877-9444.**

(174) PRINTERS

★ ★ ★

BCE GARAGE SALE!

Save even more on high quality printers! We've got some returned and used items we need to clear out of our warehouse. All of this equipment has been tested and is guaranteed to be in good working order upon arrival.
Be sure to see our RED FULL PAGE SECTION for other bargains.

NEC PR103A $119
Commodore 6400 ..... $319
Canon PJ1080A $169
Axiom DX2000 Sheet feeder $49
Axiom DX2500 Sheetfeeder $49

BCE 1-800-545-7447

Ask for Operator 28

BDT Model ASF524 Sheet Feeder for C. Itoh F10-40/55 Printers. new in a box $320, shipping prepaid. **Dolan,** Box 312, Versailles, KY 40383. 9-81

CLOSEOUT! Over 3000 computer printer ribbons - all makes and models. As low as $.09 each! For catalog write: **ISE #77,** Box 8256, Brownsville, TX 78521. 512-546-4810.

Centronics 779 printer, 12" wide, bi-direct tractor feed, parallel. $100. **303-972-4167.**

Diablo Hy-Type 1 Ribbons. Cloth ribbons for Diablo Hy-Type 1 printers and terminals. Expired date code, but all appear to be OK. Boxes of 6 $4.50, $.50 ea. in qty of 100 or more. **Marshall Fletcher,** 68 Walnut Park, Rochester, NY 14622. **716-266-6760.** 9-81

Computer Printer - Dot Matrix 100 CPS **Four Interface**-Serial/Parallel/IEEE488/TTY $95. Call **Dave, 312-860-6516.** 8-81

Cut Sheet feed for NEC P-2/5, new $200; bi-directional tractor for NEC P-3/7, new $100. **S. Mills,** 4615 Orleans Blvd., Jefferson, LA 70121. **504-733-9611.** Add-post.

DIABLO 630 API - $695.00

•40 cps daisywheel, operators guide, data cable, 90 day warranty, forms tractors & sheet feeder available.

EMX 415-656-4862.

Diablo 620 Daisywheel printer, 25cps letter quality, RS-232, 15" carriage, mint condition $275 + shipping, 10 DRP. **Bob, 702-465-2473, Sage Associates,** 135 Artist View Drive, Wellington, NV 89444. 9-81

Diablo 630...Letter quality printers...Like new, perfect condition, from $850; 630 API (serial & parallel) $1095; 630 KSR (with keyboard)...$1295; Diablo 1650 KSR, metal wheel, 45 Cps $895; diablo 1610 RO, 48 Cps, Super Value @ $550; Model 620, 21 Cps, $395; Full Warranty. Superior equipment at excellent prices! **Expansion Products Service Company...** (Certified DIABLO Service Center)...Contact us for full details & pricing: P.O. Box 4217, Mountain View, CA 94040....**415-965-7222.**

★

Diablo 630 API Printers

Brand New with manufacturer's warranty & cable $795; Diablo Cut-Sheet feeders, $299; Diablo tractor feeds $99; Visa or Mastercard accepted. See our display ad for more items. **R.A.L. Consulting,** 14805 Cole Dr., San Jose, CA 95124. To order, call: **(800) 821-5226 ext. 440 or 408-559-6459.**

Diablo 630 - New Diablo F-10 Mechanical Sheetfeeder for Diablo 630 $395. **Ray Kennedy,** 705 Butternut Avenue, Royal Oak, MI 48073. **313-585-4736.**

Diablo Accessories: Forms Tractors for 630 & Hytpe II Printers; Uni-Directional $95; Bi-Directional $195, (new); $175 (used); Sheet Feeder, mechanical $425 (new); $325 (used); Dual Bin sheet Feeder, automatic, Processor controlled, for Diablo 630, $895. **Expansion Products Service Company,** PO Box 4217, Mountain View, CA 94040... **415-965-7222.**

Diablo Hy-type-I printer mechanisms complete $75 manual included. Diablo forms tractor Hy-type-I, Hy-type-II $50 each. All Plus UPS. **919-833-9672.** 7-81

Diablo or Qume printer **power supply kit.** $75. New QUME pin feed platens. $40. **Digital Search, 803-877-9444.**

Disk Drives. IBM Compatible. DS/DD Full Height 5¼. MPI Model/52SA $29 each; Also 256K-150ns DRAM in stock. Available in stock, immediate delivery, a good amount of unused Floppy Disk-Drives. Although Relatively new these drives are sold as is. Subject to prior sale required. For more information call us immediately with your requirements. Offer only good until all products are dispersed. **Selectronix,** 19142 Van ness Ave., Torrance, CA 90501. **Tel: 213-320-8990.** 10-83

Epson Ribbons

MX/RX/FX-80, Citizen MSP-10 or compatible ribbons; 6/$13.50; **LQ-1500** ribbon; 6/$16.50; $3 shipping. VISA/MC add 4%. **BBC,** PO Box 13070, Minneapolis, MN 55414. **612-379-1020.** 10-82

Have an I/O IBM Selectric Typewriter that you can't interface to your computer? I have just the interface you need $105. **Ron's Electronics,** N 5009 Sunset Vista, Onalaska, WI 54650. **608-783-5341.**

IBM 15" Selectric Printer/Typewriter, standard ASCII code, serial/parallel. All units rebuilt $369. **Ron's Electronics,** N 5009 Sunset Vista, Onalaska, WI 54650. **608-783-5341.**

Interface Kit for Diablo or Qume printers RS232 or Parallel $95; parts for Qume 1 & 3 and Diablo Hytype I: Repairs, cases, power supplies. **Digital Search, 803-877-9444.**

Keyboard $89.95 for **Brother15/Comriter/Dynax15,** convert printer into a typewriter, w/memory, correction capability. 90 days warranty. $5 shipping. VISA/MC add 4%. **BBC,** PO Box 13070, Minneapolis, MN 55414. **612-379-1020.**

.. For an offer you can't refuse ...
GODFATHER'S used computer SYNDICATE

$$$$ I Buy, Sell, & Trade printers. **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**

STOP

MOMS SOFTWARE is now advertising in the *Computer Shopper* "SHOPPERS MART." (Look for the stop sign.) Thank You, to all our customers, who made this possible. **MOMS!**

NEC 2030 Spinwriter, 25cps, bi-directional tractor, extra thimbles, superb print quality, $500. **919-968-4725.** 9-82

NEC Spinwriter 8810 with envelope feeder $1800. Call **813-923-5836, Jon Hale,** 2477 Stickney Point Rd. #123B, Sarasota, FL 33581.

Nec Spinwriter model 7700 set up for Vector computer $300. SASE. **Roy Kephart,** 4101 NW 19 Terr, Fort Lauderdale, FL 33309.

★ ★ ★

PRINTER LIQUIDATION

VIVITAR Transtar Daisywheel Printers. Model 130, parallel or serial. Twenty CPS, original retail: $895, Sell for only $199. Same as Silver Reed EXP 550. Full warranty, immediate delivery. Call **Steve 1-800-752-5262.** MC/VISA accepted.

PowerType Daisywheel, serial and parallel, 32 switches, proportional spacing; tractor unit, ribbons, wheels, $260. **203-569-0564.** 9-81

Printers Close-out

All New in box with mfg. warranty.

Diablo S-11 serial 100 cps $149
Epson RX-80 F/T + 100 cps $199
Epson FX-100 + 160 cps $399
NEC 92 serial 180 cps w/NLQ $299
NEC P3 serial 180 cps w/NLQ $399
Qume LP20 serial 25cps LQ $299
NEC 3510 serial 35cps Spinwriter ... $599
NEC 3530 par. 35cps Spinwriter ... $599
NEC 7710 serial 55cps Spinwriter ... $699
NEC 7730 par. 55cps. Spinwriter $699
NEC 8850 par. 55cps Spinwriter $899

Tractor, sheet feeder, ribbon, cables available. **Micro International,** 600 Central Ave., PO Box 774, Highland Park, IL 60035. Tel: **312-945-4372.** 10-83

Printhead Assy. for TI Printers OMNI800/810, 820, 850, 855, 860 Like new & used tested $50 each MBG. **K. Louis, 214-340-8815** 7pm. 10-82

SURPLUS SALE (Because I overbought)
Ribbon Cartridges (Brand-name merchandise m/s) for Diablo 620, MemWriter 610-20-30. Mint condition-original factory containers w/logo thereon. Will sell below cost w/**MGB** while supply lasts. 3/$12-$36/Dz prepaid UPS or best offer for all. Inquiries welcome.

TOP QUALITY GENERIC RIBBONS
Or brand-name. Everyday low prices. Most printers. All sold w/MGB. Good Service. Price list on request.
Bill Allbritton ..... **(205)536-1527**
2603 Artie St., Huntsville, AL 35805.

Sound Barrier with fan 28"Wx21"Dx16½"H, excellent condition, cost $500 will sell $225. **212-432-1960/1, F.E. Wallace & Co. Inc.,** One World Trade Center, Room 4517, New York, NY 10048.

TI Printer font modue for OMNI 855, 865 Printers cartridge font module Gothic 10/12 ASCII96, Script, Prestige Elite and others. Like new $27 each MBG. **K. Louis 214-340-8815.** 10-82

TTX1014 Cut sheet feeders, $69.95. Fits Swintec, Nakajima Olympia Electronic R.O. **415-829-4976.** 3-83

Tractor feed for Microline 80 or Microline 82. New in box $35. **Cascade Electronics Inc.,** Route 1, Box 8, Randolph, MN 55065. **507-645-7997.**

Typewriter/Printer $15; Taken off line. Similar to ones offered in CPU's ad. These make great letter quality typewriter/printers. We supply detailed instructions and have a compelte interface (with serial and parallel) for $105. **Ron's Electronics,** N 5009 Sunset Vista, Onalaska, WI 54650.

Upgrade your printer to Correspondence Quality print by installing our ROM. Will fit 8510-(A&B), NCR (TM) 6411, APPLE (TM) DMP and others. Single pass printing of our CQ font replaces proportional font on these printers. Send SASE for original print sample. $30 + $5 S&H for 8510A ROM, $35 + $5 S&H for 8510B ROM. To order VISA/MC, call **MicroAge Computers 607-936-3053.** Send Check, Money Order, or Purchase Order to: **House of Hardware,** RD #1, Box 227, Burdett, NY 14818. 10-83

WANTED: Need Data Products D50 Daisy Wheel Printer that is not working for parts. Call **Swafford Realtors 505-293-6400** with price. 10-82

Wanted: Graftrax plus for Epson MX-80. **Warren Howe,** 7493 750th West, Oak Harbor, WA 98277. 9-81

(178) TAPE DRIVES

5¼" Hard disk drives, ST412 (10 MEG) $175; Tandon TM502 (10 MEG) $165, for IBM PC-XT; Seagate ST4026 (20 MEG) $375, for IBM AT; Streaming tape backup drives Wangtek $275; Archive $325. Call **ERD Systems, Inc., Ed Lewis, 617-452-6000, 617-851-5852.** 9-81

★ ★ ★

CDC Keystone 6250bpi 9 track tape drives w/Pertec interface, $7250 each. Call **Lee, 619-270-1994.**

IBM-PC 9-TRACK TAPE DRIVES

Exchange data with minis and mainframes. Industry standard 800 BPI, 9-track tape drives for the IBM-PC, XT, AT. $1200 to $2100. Write or call for 8 page brochure. **Electrovalue Industrial Inc.,** Box 376-CBS, Morris Plains, NJ 07950. **201-267-1117.10-84**

Tape Back-Up Archive 3020 in case with power and fan, schematics and data, Good condition only $85. **Tucson Computer Products, 602-881-8138 Jim or Bill.** 9-81

½" mag tape drives. New--Wanco -Perkin Elmer 7", 9 track 800 BPI $450 each. **Digital Search, 803-877-9444.**

(180) CRTS, MONITORS

14" MITSUBISHI RGB color monitors, without case, will work on IBM and compatibles, $50. Minor defects on logic board, easily repairable. CRT tube comes with full guarantee. Ultra-high resolution, will work with EGA cards. **MEGATECH,** 203-634-4593, M-F, 9-5; PO Box 4213, Yalesville Station, CT 06492. We horse-trade — call or write today!

★ ★ ★

BCE GARAGE SALE!

Save even more on high quality monitors! We've got some returned and used items we need to clear out of our warehouse. All of this equipment has been tested and is guaranteed to be in good working order upon arrival.
Be sure to see our RED FULL PAGE SECTION for other bargains.

Amdek 310G TTL 12" Monitor (Made for Olivetti) $69
Magnavox TTL Monitor (Made for Leading Edge), amber and green screens available $65
Samsung amber composite monitors $30

BCE 1-800-545-7447

Ask for Operator 28

.. For an offer you can't refuse ...
GODFATHER'S used computer SYNDICATE

$$$$ Super Hi-Res RGB monitors--See our full page ad this issue. Check index in front. **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**

★ ★ ★

TTL Monitor Liquidation!
Only $59

12" Green High Resolution TTL Monitor, made for Cordata by Victor Data Systems. 400 line resolution. Some of the cases have slight cosmetic imperfections, but we've tested them and they're all in good working condition. 30 day 100% Satisfaction Guarantee.

BCE 1-800-545-7447

Ask for Operator 28

(181) CRT TERMINALS

(182) TERMINALS

ADDS Viewpoint Basic Terminals with original 90-day warranty $325. No one can beat our price. The new Viewpoint 2020 is also available. **Digital Search, 803-877-9444.**

Hazeltine 2000 Terminal, Model 4DTD, Hazeltine printer model 5DTD Included $150. **303-972-4167.**

.. For an offer you can't refuse ...
GODFATHER'S used computer SYNDICATE

$$$$ WYSE 50 terminals like new $499!! With 90 day warranty!! **GODFATHER'S USED COMPUTER SYNDICATE,** PO Box 3037, 1154 W. Hwy. 436, Forest City, FL 32714. **305-774-1111.**

XT COMPATIBLE SYSTEMS

Turbo Mother Board 8 MHz and 4.7 MHz
640K RAM Installed
Two Floppy Disk Drives
Serial Port — Parallel Port
Color Graphics Video Card
Real Time Clock — Game Port
Flip Top Case with 150 Watt Power Supply
AT Style Keyboard
Assembled and Tested
One Year Warranty on System

$699.00

ABOVE SYSTEM with 20 Meg Hard Drive and one Floppy Drive

$1049.00

20 Meg Hard Drive System for XT including controller

$399.00

Cascade Electronics, Inc.

Route 1, Box 8
Randolph, MN 55065
507-645-7997

COD Add $3. Credit Card Add 5%. MN Add 6%

WALKER ELECTRONICS CO.

3521 Hacienda, Dallas, Texas 75233 — 214/339-4916

SPECIAL — TERMINALS — SPECIAL

12' B/W or Green Screen. 80x24 display, in attractive case w/separate keyboard. 75-9600 baud, cursor controls, num. pad. No parity check, RS232C port, w/manuals, 30 day warranty. **Black/White — $79.95**** ..... **Green — $89.95****

FLOPPY DRIVES

Shugart SA455 DSDD, 40 TRK Direct Drive. New, 90 day warranty, 6 ms., ½ hgt. XT compatible **$89.95***
Panasonic JU455, DSDD, 40 TRK Direct Drive, XT Compatible, mfg. 1 yr. warranty, 6 ms., ½ hgt. **$119.00****
Panasonic JU475, DSDD, 80 TRK, 96 TPI Direct Drive, 1.6 mgb., 6 ms., mfg. 1 yr. warranty, AT comp., ½ hgt. **$159.00***
Tandon TM65-2L, DSDD, 40 TRK, PC XT Compatible, ½ hgt. **$119.00***
MPI 91S — Full hgt., 96 TPI, 80 TRK, SSDD, New, Surplus, 30 day warranty **$39.95***
(All floppy drives carry mfg. 1 yr. warranty except as noted.)

HARD DRIVES

10 mgb. Seagate ST213 w/cont. and cables, ½ hgt **$415.00***, **Bare Drive — $325.00***
20 mbg. Seagate ST225 w/cont. and cables, ½ hgt. **$469.95***, **Bare Drive — $395.00***
20 mbg. Seagate ST4026 40 ms., XT or AT compatible, full hgt **$640.00***
30 mgb. Seagate ST238 ½ hgt., 65 ms., RLL2,7 w/cont. & cables **$545.00***
30 mgb. Seagate ST4038 40 ms., XT or AT compatible, full hgt. **$750.00***
40 mgb. Seagate ST4051 full hgt., 40 ms., XT or AT compatible **$825.00***
(All Hard drives carry mfg. full 1 yr. warranty)

HARD DISK CONTROLLER BOARDS

DTC 520A SASI w/cables for 2 drives **$129.95***
DTC 5150CX for PC & XT New w/cables, 1 yr. mfg. warranty. **$175.00***
DTC 5290 for AT, New w/cables, 1 yr. mfg. warranty, floppy and hard drives **$299.00***
DTC 5160 PC/XT. Supports RLL2,7 encoding. Get 30 mgb. on 20 mgb. drive **$209.00***
Western Digital WD1002WX2S, Auto Configurable **$129.95***
Western Digital WD1002-WAH for AT **$269.95***
Western Digital WD1002-HDO for Z80 Systems **$139.95***
Adaptec 2070 RLL Controller **$195.00***

DISK DRIVE CASES W/POWER SUPPLIES

Dual Reg. hgt. 5¼" Vert. mtg....**$69.95***, Horiz. mtg. **$79.95***
Dual Half hgt. 5¼" Vert. mtg. or Horiz. mtg. **$54.95***
Single Reg. hgt. 5¼" Vert. mtg...**$49.95***, Horiz. mtg. **$54.95***
Single Reg. hgt. 5¼" Hard dr. Vert. or Horiz. mtg. **$94.95***
Dual Reg. hgt. 5¼" Hard dr. Vert. or Horiz. mtg **$129.95***
Dual Half hgt. 5¼" Hard dr. Horiz. mtg **$129.95***
(All cases have EMI filters, quiet 43 CFM fans, and linear power supplies, Specs furnished on request. 1 yr. warranty. Quantity prices available.)

MONITORS

15" Amber or green. Ball BC 500, High resolution, 1200 lines, 15.750 or 19.20 KHZ Horiz. New in orig. cartons, 32 MHZ Bandwidth. Requires 24 VDC @ 1.5A, TTL level, Open frame. **Amber — $55.00*, Green —** **$50.00***
12" Green screen ball equiv. 22 MHZ Bandwidth, requires 12-15 VDC at 1 amp. 15.750 KHZ Horiz., TTL level, open frame **$37.00***
9" Panasonic open frame green screen monitor. 25 MHZ Bandwidth. TTL level, split Horiz., Vert., and Video **$29.95***

CABLES

Printer Cable — Serial **6 ft. — $16.00*, 10 ft. —** **$20.00***
Printer Cable — Parallel **6 ft. — $16.00*, 10 ft. —** **$20.00***
Hard Disk Controller cables. Set **$14.00***
Dual 5¼" Drive cable **$15.00***
5¼" Drive power cable — 24 in. long w/conn. **$1.50 plus $1.50 packing & shipping**
5¼" Drive Power cable — 24 in. long w/male & female conn. ..... **$2.50 plus $2.50 packing & shipping**
5¼" "Y" Kit — 2 female conn. and 1 male conn. w/wire ..... **$3.25 plus $2.50 packing & shipping**
5¼" "Y" cable as above, assembled! ..... **$3.75 plus $2.50 packing & shipping**

DISK STORAGE BOXES

50 Diskette Unit w/Lock **$9.00***
100 Diskette Unit w/Lock **$13.00***

BUILD YOUR OWN PC CLONE!

Power Supplies w/Side Switch. 135 watt — **$79.95***, 150 watt — **$89.95***, 200 watt — **$147.95***
640K Mother Board w/0K memory, 8 expansion slots, compatible Bios ROM, 4.77 MHZ **$139.95***
Turbo-Plus Mother Board w/0K, 4.77 — 8 MHZ, Switchable, 8 expansion slots, Bios ROM **$206.00***
Floppy Disk Controller — handles 2 internal and 2 external drives. W/cables **$49.95***
MF 100 Multifunction card — w/0K. Expandable to 384K, real time clock, serial, parallel and game ports **$99.95***
576K RAM card — w/0K, expandable to 576K **$76.95***
Rambank Memory expansion card — w/0K, expandable to 2 mgb. on board for RAM disk w/software **$254.00***
Slide out or flip top case for PC and XT w/mounting hardware. Excellent quality **$53.95***
5151 Style keyboard **$98.75***
AT Look-Alike keyboard for XT **$85.95***
AT Style keyboard for AT or XT **$99.95***
AT Multifunction card w/0K, serial, parallel ports and memory, expandable to 3 mgb **$275.00***
Colorgraphics Card w/printer port **$99.95***
Colorgraphics card w/Video port **$82.95***
Monographic card w/printer port, (Hercules mono/graphic compatible(..... **$105.00***
Portable Clone — (Case, power supply, 9" monitor, and keyboard) **$595.00****
Samsung 12" TTL monitor — Monochrome green or amber **$112.95***
Samsung 12" composite monitor — Monochrome green or amber **$67.95***
(We can quote price, configured to suit)

PRINTER SPECIAL

Centronics 152, new in orig. packing, 150 cps, w/manuals, serial port **$225.00***

SWITCHING POWER SUPPLIES

Astec 140 watt, +5V @ 8.6A, +12V @ 4.5A, +24V @ 1.7A, −12V @ .200 ma. **$32.95***
Compower, +5V @ 8A, +12V @ 2A, −12V @ 500 ma., +24V @ 1A **$21.95***
Compower, +5V @ 10A, +12V @ 2.5A, −12V @ 500 ma., +24V @ 1.5A **$23.95***
Deltron open frame linear 5V.7.5A **$12.95***
Same 12V.10A **$14.95***

FANS

IMC 110 CFM. New. Ball bearings. 4¼", 115 VAC **$6.00***

* Add $2.00 ea. for packing. Shipping not included. ** Add $4.00 ea. for packing. Shipping not included. Texas residents add 6% SALES TAX. All items subject to prior sale. Due to ad deadline, some items may not be in stock. Please check with us. Please call or send SASE for latest flyer. Due to ad space we could not include many more items we have in stock.

VT100/VT220 Replacement Terminals. VT 122 $449/each w/90 day warranty, quantity pricing available. **Digital Search, 803-877-9444.**

(183) MULTIBUS BOARDS

SBX DUAL serial card, $25; SB plotter interface card, $25. Canberra: digital I/O card, $150; dual display board set, high-resolution color graphics, $500. Konan floppy and hard disk controller board, $200. Intel: bubble memory card, $300; 64K memory card, $200; SBC 517 I/O card, $200; 88-40 card, $300; hard disk channel controller card, $150. 86-12A card with monitor, $500; SBC 86-05 card with monitor, $150; 464K ROM card, $150; SBC 80-14 card, $150; 80-10B card, $150; SBC 724 analog output board, $200; SBC 80-10A, $150; SBC 80-20 board, $200; ICE-80 board set, $400; SBC 86-12A with Intel 32K RAM expansion module, $800; SBC 104 combination memory and I/O expansion, $200; SBC 80-24 with extra SBX serial multi-module board installed, $300; SBC 660 chassis with power supply and front panel, $800; SBC 635 chassis, with front panel, $600. Electronic Solutions Multibus 4-slot card case, $200. All working, with full documentation. **MEGATECH,** 203-634-4593, M-F, 9-5; PO Box 4213, Yalesville Station, CT 06492. We horse-trade — call or write today! Free catalog.

(184) MEMORY

PCjr Impulse memory expansion, 640K $299; hard disk for PCjr $699 complete. Specializing in PCjr add-ons. Send SASE for info. **Paul Rau Consulting,** 260 N. Lincoln Way, Galt, CA 95632. 9-82

(186) MODEMS

212A/103 Modem. 1200 baud, 300 baud. Auto dial, etc. Hayes compatible. Excellent value. $125 w/1 year warranty. **Digital Search, 803-877-9444.**

(187) WORD PROCESSING

★ ★ ★

WANG OFFICE ASSISTANT

Dedicated multi-tasking word processing system. 512K, 2 drives, 240 WPM daisywheel printer. Software includes word processor, merge, forms, typewriter emulator, Multiplan, PFS: file and PFS:report. NEW, FULL WANG WARRANTY. Immediate delivery. Original retail: $4,850. Sell for only $1,495. Call **Steve 1-800-752-5262.**

(188) MISC. EQUIPMENT

34-PIN EDGE CONNECTORS: 75¢ each. Add $2.50 shipping/handling per order. **Jonathan Gin,** 817 Canyon DelRey, Monterey, CA 93940.

8086 expansion & coprocessing board for Z80 computer, with 128k memory, assembled and tested with schematic & pin out, can run CPM 86 & MS/DOS $65; Also, reject board with schematic & pin out, missing some chips $30. **Mike Drum,** 3102 S. Home, Berwyn, IL 60402. 9-81

ASCII Keyboards 10 bit parallel I/O, Hall-effect, by Microswitch. New OEM surplus. Includes two keypads, and top row function keys. Excellent feel, top quality, steel frame, no case. Lacks ESC keyswitch, but has traces and holes in PCB. All mfg spec sheets. $25 add-post. For more info send SASE to **Mike Krabach,** RFD 2 Nate Whipple Hwy, Cumberland, RI 02864 or **401-333-5350.** 9-81

BARGAIN! Multi Font OCR, Toltec TO-5000B. Can read 4 fonts per page, any line spacing or pitch (inc. prop.). Single sheet or stacked input. RS-232 interface. Nearly new. Our cost $12,500, asking $7000 or best offer. **214-827-8674.**

Chorus Data Systems video interface board and imigit software $575. **213-479-0665.9-81**

Digitalker Speech Synthesizer has 139 word vocabulary & interfaces with computer parallel port. High quality PCB with complete plans only $12. Use Mastercard/VISA & order **Toll Free 800-821-5226** Ext. 426. from **Jim Rhodes.** 7-83

Everex ¼" Tape drive controllers $75 each. Call **Lee 619-270-1994.**

FREE ADVENTURE GAMES! Two free adventure games, requires Adventure Command module. Will send disk unless tape requested. Please send $2 for shipping and medium. **L. Steven Chearis,** Box 27547, Albuquerque, NM 87125-7547. 10-82

GENUINE IBM enhanced graphics adapter card, low hours, documentation, used, $450, UPS. **Dannemann,** 1235 Delphi, Lafayette, CO 80026.

Get A Tax Break. Donate your old computer to non-profit lighthouse school for handicapped kids in Chelmsford, MA. Please call 617-256-9300 or 603-878-1342. Ask for Steve Ferland. Thank You. 6-81

★ ★ ★

HELP

WANTED TO BUY

Burroughs Self Scan Displays and Nixies. Call

Rondo Electronics Inc.

201-782-7814. 8-84

Houston Inst. complot DP-11 plotter $150, 11" wide, one pen. **303-972-4167.**

IBM PLOTTER XY/749 8-pen, A-size (8.5x11) plotter with supplies and documentation. Free Energraphics software no additional charge. $1095 the entire pacakge. **David,** 919-781-2868 after 6:30 Eastern.

Keyboards. Microswitch. 74-key, Hall-effect, high quality. Parallel ASCII. New-$45. Used-$25. **Digital Search, 803-877-9444.**

★ ★

PRINTER RIBBONS

Quality Ribbons, Anadex, Epson, C. Itoh, Okidata, IBM, Centronics, etc. **Computer Plastic Data Binder** 9-½x11 & 14-7/8x11 inches. Bargains buy direct from Importer. Wholesale & Retail welcome. Dealer inquiries invited. Details contact: **REGINA CO.,** PO Box 1361, S.F., CA 94116. **415-731-3513.** 10-82

Portable Display - w/UPS approved shipping container $50. **Richard Seale, 303-449-4897/443-4681.** 9-81

Sola Mini UPS 400 Watt with 10 minute internal battery. Reduced from $1,700 to only $700. Call **Bob Thomason,502-683-9871.** 6-82

★ ★ ★

VideoShow 150 by General Parametrics cost $3150, sell $1750; Ziyad 401 Laserjet sheet feeder cost $2000 sell $975, Will trade. **800-826-6559** California **800-221-4821. 9-82**

Wanted: Pre 1980 microcomputers for historical museum. Need not be working, very early models most desired. Call or write with condition or price. **703-961-6478/382-4458/382-9099, David Larsen,** Blacksburg Group, PO Box 929, Blacksburg, VA 24060. 7-89

(189) BOOKS, MAGAZINES

BRITISH MAGAZINES for Commodore, Atari, Sinclair, Amstrad, and other PC's. Available monthly. Write for list and prices to: **Curry Computer,** PO Box 5607, Glendale, AZ 85312-5607. 1-602-978-2902. Catalog gives TOLL-FREE ORDER LINE. 10-86

BUY DIRECT FROM HONG KONG-TAIWAN premium items to offer your customers at low oriental prices. No middle man. FREE Report. **HBC,** Dept CS$, 1036 Hoover Way, Hanford, CA 93230. **Robert & Gloria Fleming.**

★ ★ ★

Book Sale! Send for large list of computer and electronic books. **Bruce Sugarberg,** 1415B DeWitt Drive, Akron, OH 44313.7-83

★ ★ ★

Book Sale! Send for large list of computer and electronic books. **Bruce Sugarberg,** 1415B DeWitt Drive, Akron, OH 44313.9-83

CABLE and **SUBSCRIPTION TV** secret manual. Build your own **DESCRAMBLERS,** converters. Instructions, schematics for: Sine Wave, Inband/Outband Gated Sync Pulse, SSAVI methods (for HBO, Showtime, Cinemax, UHF, etc.) Send $8.95 to **CABLETRONICS,** Box 30502CS, Bethesda, MD 20814.

Disk Drive Manual - Only $3 (Regularly $10). Maintain, repair (troubleshoot, align, adjust, etc.) floppies without special equipment, software! **Automatic Teller Machines - Only $3** (Regularly $15). ATM operation, security, crimes. **Super Survival Catalog** ($1) - eighty publications - computers, electronics, security, energy, weapons, financial, medical. **Consumertronics,** 2011 Crescent, Alamogordo, NM 88310. 9-82

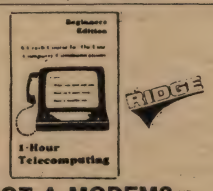
FREE

Unique Square coin with order of How To Get Rich with your microcomputer only US $12. Catalog, other books US $2. **Best Books,** Vangalenlaan #8, Euraca, Neth. Ant. 9-83

★ ★ ★

GET RICH WITH YOUR COMPUTER. Information only $1. **Computer,** Box 295, Mt. Ida, AR 71957-0295. 5-81

HACKER'S HANDBOOK Tells how to access remote computers, figure out passwords, access codes, operating systems, modem protocols. Plug into the electronic subculture; open up a world of new information. Send $12.95 to **CABLETRONICS,** Box 30502CS, Bethesda, MD 20814.



GOT A MODEM?

(Or Thinking About It?)

The Complete Guide For Beginners

This invaluable guide from IM-Press teaches you everything you need to know to sign-on and use free Bulletin Boards, O-Line Services, and other computers. Learn how Modems work and how to "download" valuable programs for FREE **$19.95 ORDER 1-800-341-1950 Ext. 77.** By Mail: **geRIDGE,** 170 Broadway, #201-CS, New York, NY 10038. 9-82

MICROCONTROLLER BOARD PLANS. ROM RAM RS-232 and more. 8031 CPU. Use in Robotics, Control, add Intelligence to projects. Actual circuits plus how to design your own Microcontrollers. $12. Example programs and 8031 programming data $12. **Paul Renton,** PO Box 1525, Mercer Island, WA 98040. 9-81

NEW Satellite Descrambler Manual Decode HBO, Showtime, Cinemax, Anik-D, Fantasy, Extasy. Theory, schematics, thorough explanation of digital audio encoding. $10.95. **CABLETRONICS,** Box 30502CS, Bethesda, MD 20814.

Selecting graphics software? Descriptions of hundreds of IBM-compatible programs (chart, publish, paint, font, CAD), just $4. **Eric Meller,** 1211 Virginia #C, Berkeley, CA 94702. 9-82

(190) MISC. LARGE SYSTEMS

(191) CP/M SOFTWARE

1000's of FREE SOFTWARE programs for over 80 computer formats including IBM, CP/M & COMMODORE from the Public Domain Users Group. Over 8500 members worldwide. For information send large SASE to **PUBLIC DOMAIN USERS GROUP,** Box 1442-C2, Orangepark, FL 32067. 8-81

"Basic Computer Games" and "More Basic Computer Games." 185 games on four 8" CPM disks. $39.95 postpaid per-set. **Ray Robertson,** 1600 Morning Drive, Loveland, CO 80537. 10-82

CACHE22 + CP/M 2.2 = CP/M Max!

CACHE22 is a front-end system program that buries **all** of CP/M 2.2 in banked memory. It helps 8080/Z80 computers to survive by providing up to 63.25K of TPA, plus the ability to speed disk operations, eliminate system tracks, and run Sidekick-style software without loss of transient program space. Complete source and installation manual, $50. **MIKEN OPTICAL COMPANY,** 53 Abbett Avenue, Morristown, NJ 07960. **201-267-1210.** 6-82

CP/M 2.2 Learn all the secrets. Full commented, nothing left to the imagination, supplied on 8" disk. All memory locations revealed. Contains CCP, BDOS. Also a "souped-up" Z80 version. 100s of satisfied customers. Send $50 to **"Source"**, PO Box 63, Greer, SC 29652-0063.

CP/M CMBASIC, COBOL, PLI, accounting from bankruptcy. **Cbasic-86** interpreter, (6 copies/originally $200/sell for $25). **Micro Focus COBOL-86,** (1/$850/$250). **DRI PLI-80,** (2/$500/$100). Graham-Dorian **Accounting**

8-bit Cbasic, 22 Inventory, 16 G/L, 17 A/R, 24 Apartment, ($395/$5 each). **CP/M-80 for TRS-80 II** (5/$150/$25). All 8" disks, CP/M-80 or CPM-86 as specified. Manufacturer sealed, with registration cards on all but accounting. **David Stephens,** POB 59467, Dallas, TX 75229. 214-350-0986.

CP/M Programs and languages on 8" SS-SD diskettes. Like New and unused. Send SASE for list. **Rob Lee,** 25 Amaryllis Ave., Waterbury, CT 06710. 10-84

Cobol-80 Package to run on CPM 8 Bit Machines. 19080 Microsoft Ver. 4.01 on 8" or 5" disk. With M-80 macroassembler, L80 linker, Lib-80 library manager, Runtime package & manual. Used $175. **M. Rossel,** 45 Susan Ln., Buffalo, NY 14220. Call **716-827-0040.**

Perfect Software Writer, Speller, Calc, Filer and with documentation $75, without $30; Peachcalc, Mail List Manager and Spellchecker $20 each; 8" Peachtree Accounts Payable, Sales Invoicing, $60 each; Armor Systems Excaliber Series $150/module; REALWORLD Accounting Software: GL, AP, AR, PAY, Invoicing, Sales Analysis, $150 each, $600 all; PERSONAL PEARL $100; Typeit typewriter emulator $20; The WORD+ spell checker $50. **S. Mills,** 4615 Orleans Blvd., Jefferson, LA 70121. **504-733-9611.** Add-post.

TurboDOS - Complete license transfer $100; Encode/Decode $5; Autosort-MR & Ultrasort both for $15. **Richard Seale 303-449-4897/443-4681.** 9-81

★ ★ ★

YOU FOUND IT!

PHONE BILLS going sky high searching for that program? 1000's of CP/M Public Domain programs $5/disk. Send $5 for directory disk & catalog. Specify computer. **Public Domain Software Center,** Box 838, Chapel Hill, NC 27514. 10-83

(192) MISC. SOFTWARE

CHRISTMAS '86 CANCELLED?!

THIS MAN MISSING and PRESUMED KIDNAPPED!

PLEASE HELP FIND HIM AND SAVE CHRISTMAS!

Finding Santa Clause is only part of the fun in *A Christmas Adventure*— the unique entertainment program that "captures the spirit of the holiday season". Full of humor, fun and surprises—**AND**—it can be personalized; so it makes a **PERFECT HOLIDAY GIFT** for family and friends. To find out how you can get a . . . . . .

FREE SAMPLER

containing over half of the $24.95 program, and for more details, see our "FREE SOFTWARE" ad in this section. (Look for Rudolph the Reindeer!). **BitCards Inc.,** Champlain, NY. 12919 9-81

IBM PC AND CLONES

SANYO 55X & COMMODORE PUBLIC DOMAIN RENTALS

THOUSANDS OF PROGRAMS YOU CAN RENT and Copy for $1 per disk or use our low cost copy service. Moneyback guarantee. Sampler $5. Mastercard, VISA! Recorded info/order **619-941-3244 (anytime) or #10 SASE for details (Specify Computer): Futuresystems,** Box 3040(C), Vista, CA. 92083.

FREE SOFTWARE!

Reviewers have praised it as being "absolutely superb" and "delightfully humorous"—"bound to be a major hit in 1986". Now you can get a free sneak-preview of *A Christmas Adventure*, the outstanding entertainment program from **BitCards**. Makes a perfect holiday gift—easily customized to include personal references to player plus your own greeting message. Recommended in over a dozen computer magazine holiday gift guides.

Free playable sampler/demo contains over half the actual program ($25 value). Over a dozen of the award-winning hi-res graphics, music, animation and a mini-customization utility are included. Comes on DSDD Dysan diskette. Limit: one copy/household. Send name and address, and please enclose $1 cash or loose stamps (5x22¢) to help cover sh/hg costs. Specify Apple II or C-64/128. **BitCards Inc.,** PO Box 1289-B, Champlain, NY 12919. 9-81

dBase III Plus $250

SRT Accounting System: Payroll, Gen. Ledger, Acct's Payable and Menus . $350

Broward Millwork, Inc. 3333 S.W. 25 St., Pembroke Park, FL 33009. 305-966-3333.

(194) MISC. ACCESSORIES & SUPPLIES

64K PRINTER BUFFER—$89.95 + $2.50 SHIPPING

Centronics parallel port, multiple-copy capability, auto diagnostics, clear button, holds over 40 pages (double-spaced), repeat function, 30-day warranty. Send check or money order to: **Reasonable & Commercial Sales,** 8115 S.E. 82nd, Portland, Oregon 97266. 503-775-3939.

8-INCH DISKETTES in unopened boxes of 10, IBM compatible. $6 per box postpaid. Quantity discounts available. **Diskettes,** PO Box 2215, Brockton, MA 02403. 10-83

PACKAGING FOR SOFTWARE

VINYL DISKETTE ALBUMS for Software Publishers: Transparent sales packages, 6.75" x 9.5", designed to hold several 5.25" program diskettes and associated documentation, ready for sale. We dismantled 60,000 software packages and sold the disks as disks. We still have some packaging at bargain prices. Small and large software publishers are invited to contact us for a description or to purchase samples of these beautiful packages. **Electrovalue Industrial,** Box 376-CV, Morris Plains, NJ 07950. **201-267-1117,** Monday - Friday, 10 - 5. 10-84

CASSETTE TAPES. Manufacture's overrun of software. 1-20 minute assorted tapes, in Noreico hard cases $19.95 per 100. **Compuware,** 15 Center Road, Randolph, NJ 07869. 10-83

DISKETTE CASES "library" style with pop-up easel. Holds 10. Sold everywhere for $5.95, ISE price - for 5¼" as low as $1.25, $1.50 for 8". "Disk Minder" holds 75 5¼" disks $9.00. Free Catalog: **International Surplus Electronics #75,** Box 8256, Brownsville, TX 78521. 512-546-4810.

★

GRAND OPENING SALE
COMP-CONNECTOR & CABLE

High quality, fast delivery, excellent price. Write for free catalog. **Anda Co.,** POB 577, Weatherford, OK 73096. 405-772-5702. (Wholesalers are welcome). 10-82

HARD SECTORED DISKETTES: We have them! Delivery within 24 hrs. Lifetime Warranty. 5.25 (ss/sd $12.50), (ds/dd $15). **Al Levy,** Box 71, Hicksville, NY 11802. **516-293-8368.** 1-81.

HARD SECTORED DISKETTES: Delivery within 24 hrs. Lifetime warrantee. 5.25" (10 hs) ds/dd $18. 8" (32 HS) ds/dd $25. **Al Levy,** Box 71, Hicksville, NY 11802. 516-293-8368. 10-86

IBM Users with ½ht drives. Is your top indicator light visible? Try the LITEPIPE. Mounts against indicator under case ledge. Send distance between drive top and indicator. $1.50 + $1 P&H, SASE. **Goldschmidt Supply,** Box 726, Moorestown, NJ 08057. 9-82

Mag Tapes, used, good condition. ½", 6250 BPI, 650 thru 2500 feet. $4 large to $2.50 small. **303-972-4167.**

SMART CABLE Instantly connects any RS-232 computer and peripheral. Includes universal RS-232 interface, logic module and cable. Regularly $99.95 - send only $50 PP! **ISE #76,** Box 8256, Brownsville, TX 78521. 512-546-4820.

Sola Mini UPS 400 Watt with 10 minute internal battery. Reduced from $1,700 to only $700. Call **Bob Thomason, 502-683-9871.** 6-82

(195) INTEGRATED CIRCUITS AND COMPONENTS

★ ★ ★

HELP

WANTED TO BUY

Burroughs Self Scan Displays and Nixies. Call

Rondo Electronics Inc.

201-782-7814. 8-84

Microwonderland. Commodore custom made ICs for VIC-20, PET, C-64, C-128, KIM-1, 1541/71 Drive etc. **Free 64K DRAMs with orders!** New Melody chips! Analog Delay lines! DRAMs, EPROMs, SRAMs, CPUs, Peripheral ICs etc. Thousands of ICs by Mail! We have what others haven't - Unique components & low prices! We are here to sell you parts. Catalog - $3. **K. Boufal-Consulting Services,** 244 Fitzwater, Philadelphia, PA 19147. **215-925-6469.**

* SALE V20-8 * $15.95

+ S&H $2.85; *Low Power CMOS, *Speeds Up Display, *CP/M Codes, *NEC Prime Parts, *Cool Operation, *"All about V20" $5.00. *Hitachi 50256-15* $3.95 + S&H $2.85 (call for current price), *Prime Parts, *Best Memory for Sanyo. Send check or MO to: **R.F. & Assoc.,** 1930 Purdue Ave., Los Angeles, CA 90025. **213-477-8310.** 8-81

We buy gold scarp boards, circuits, & connections. Quick cash payed. Send samples to: **Chicago Surplus,** 2440 West Chicago Ave., Chicago, IL 60622. **312-235-MINT.2-83**

(196) HELP WANTED

A-Personal Resume Service. Maximize Your Potential Effective - Innovative Resumes. Reasonable Rates. For Brochure & Prices. **26 Main St., Suite Q,** Toms River, NJ 08753. 6-81

Computer Opportunities! How to make it on your own. Sample Publications get you started. Free details. Send LSASE to: **RPM Publishing,** Box 2358-CO6, Battle Creek, MI 49016-2358. 8-81

Retire Early...With Pay! Become a CE Distributor, Highest commissions and bonuses paid. Full or part-time. Send LSASE to: **RPM Marketing,** 1169 East Columbia, Suite 12, Box 2358-CSX, Battle Creek, MI 49016-2358. 9-82

STRIKE IT RICH!!! Start your own mailorder business! Flood your mailbox with orders! Complete program only $10.00! **A&S Marketing,** 623 N. Lincoln, Dept. CS, Lakeview, MI 48850. 8-81

(198) POSITIONS WANTED

(199) OTHER

A-Personal Writing Service. Creative & Technical Writings. Business Training Programs. Write for Free Brochure & Rates. **26 Main St., Suite Q,** Toms River, NJ 08753.6-81

Attention Opportunity Seekers! Get in on the ground floor of a fast money making discovery. Send $1 for details to: **RPM Marketing** Box 2358-CS137, Battle Creek, MI 49016-2358. 8-84

We buy maintenance user's manual on computer equipment, peripherals, and terminals. **Lone Star Data Corp.** 512-340-6811. 11-81

(200) NON-COMPUTER

Buy Car, plane, boat, computers, etc. Keep it and get your money back! Unique Financing Concept. Free details or send $5 for complete information. Money back guarantee. **Beejay's,** Box 571061, Tulsa, OK 74157. 7-83

★ ★ ★

HELP

WANTED TO BUY

Burroughs Self Scan Displays and Nixies. Call

Rondo Electronics Inc.

201-782-7814. 8-84

JOSEPH NEWMAN ENERGY MACHINE VIDEO TAPES

VHS or BETA — send for information and prices. **Hartwell Video,** PO Box 10293, Jefferson, LA 70181-0293.

Laser Kit - complete! HE/NE tube, power supply, 115 VAC cord, instructions included. Visible light travels miles! Limited supply @ $79 PP. **SJH,** 24 Church St., Malden, MA 02148.

SERVICE DIRECTORY

100 Categories to choose from updated every 6 months. Price starts at 500 names $65. For ordering or price list write **P&S Survey,** PO Box 56763, New Orleans, LA 70113.

1986 DIRECTORY OF PROFITABLE MICROCOMPUTER VENTURES. Start your own home-based business with the help of this easy-to-follow information packed publication. You'll get start-up tips, effective promotional advice and a set of detailed income-producing plans. Put your equipment to work for you now! Price $9.95. **COMPU-GUIDE PRESS,** Dept. CS, 82 Pine Grove, Kingston, NY 12401. 8-84

$45,501.40. That's what my part-time computer based home businesses put in the bank last year. I'm 40, but age doesn't matter (my 15 year old is doing it too - I showed him how). Location doesn't matter. If you want to put this kind of cash in the bank with your computer, order THE MICROCONGLOMERATE THEORY (c) 1986 by me, **Robert Turner,** PO Drawer 5807, Columbus, GA 31906-0807. Please enclose $16.95. Why am I making this offer? For the money, of course. It works or your moneyback. 8-81

9-TRACK TO IBM-PC CONVERSION

Best prices in the country for conversion between 9-track, 800 BPI tape and PC or AT diskettes. Code conversion and generic formatting of data from tape to make it more "PC FRIENDLY". Disk to tape and tape to disk. Call and ask for **F.X. Webb at Electrovalue 201-267-1117,** M-F, 10-5. NJ Time. 10-84

CHAT WITH OTHERS BY MODEM! 300 BAUD. 818-842-3322. 1-83

Commodore Repair Money for nothing and the chips for free!!! Start your own service - Commodore computers repair! Who else is ready to offer you more? Detailed service documentation, custom made hard to find chips & lowest prices. Free chips with orders! C-64 Motherboard exchange - $39.95. Catalog $3. **K. Boufal-Consulting Services,** 244 Fitzwater, Philadelphia, PA 19147.

Discount Buying Service! Save $$$ on name brands like Sony, Panasonic, Sanyo, etc. Over 10,000+ products! FREE MEMBERSHIPS! Write for details & sign-up forms. **A&S Marketing,** Dept. ABCS, 623N. Lincoln, Lakeview, MI 48850. 9-81

Downloading service. Many formats available, including 8" to 5¼" formats. $15 per disk. Quantity discounts. **A.C.S.,** Box 1137, Sebastopol, CA 95472. **707-823-6731.** 10-84

ENTREPRENEURS!!

MAKE $$-SAVE $$ with inexpensive **ON-LINE** services! Shop/travel/invest, teleconferences, information exchanges, more!! Your computer or Teletrans unit--low monthly lease! Executive services via local phone. Access worldwide. **FREE DETAILS: Information Unlimited,** POB 639, Mountain View, MO 65548. 9-83

Earn $1100 per month with your personal computer. See our ad in section (103); TRS-80 Software, Peripheral. **Viking Inc.**

Earn extra money! **Market Info.,** 2988 Willowood Drive, Erie, PA 16506. 10-85

IBM 9 Track Data Conversion. Disk/tape, tape/disk, ASCII/EBCDIC. Your choice of diskette format. Mailing lists, mainframe files, etc., Easily made accessable to your PC. Quick turn around, reasonable rates. **Orange Electronics,** 1345 University Parkway, Sarasota, FL 34243. **813-355-9688.** 7-90

INVEST IN YOURSELF!

New concept, Multi-Level investment program. Includes investment publication, Awesome potential! Free details. Send LSASE to: **RPM Consultants,** Box 2358-JGI601, Battle Creek, MI 49016-2358. 9-82

Images Digitized

and enhanced at $1 per image for display using an **IBM PC** or compatible with color card. Images may be altered using **Picture Editor** ($13.95); **PC Image Processing Package** $39.95; **Demo** disk package $6.95; **PC Video/Audio digitizer** $239. Call or write for details. **419-382-0079, ImTek,** 1460 Eastgate Rd., Toledo, OH 43614.

★ ★

TRADEMARK LAW

Is your product name protected by Federal Trademark Law? Federal Trademark name searches $45 per name. Federal Trademark application services quotation on request. **Santa Barbara Digital Systems,** 1230-F Coast Village Circle, Santa Barbara, CA 93108. **805-969-0809.** 10-86

NationServ Online Information Network 618-847-2291. Jobservice, Clubhouse, News, SIGS, Shopping Mall, Classifieds, Message Center, PRIZES. 8-82

★

No More B.S.

(Boring Syntaxis)

Only $4 gives you the opportunity to share our easy-to-start-unheard before ideas to make money with your home computer. We don't promise you a house in the South of France but you will see the blonde teller at your bank more often. What a double header..Making Money and enjoying her smile at the same time. **L.B. Enterprises,** 30 East 42nd St. #906, NYC, NY 10017. 10-84

★

PACS Onsite Services Professional Affordable Computer Services

Service on IBM PC, XT, AT, Clone Computers, Okidata, Diablo, and Xerox Memorywriter. Maintenance Contract available. **Metro 214-423-7163.** PO Box 863511, Plano, TX 75086. 6-88

★ ★ ★

PCB ARTWORK +

Professional PC board artwork, schematics, for professionals/hobbyists. Single, double, and multi-layered, silk-screens, drilling-template, parts-placement, solder-mask, variable pad/trace sizes, Gerber file generation, board statistics, simulation, and more. Personal service, quick turnaround using auto-routing CAD software/hardware. Call or write: **212-928-9419, Peter Sarro,** 250 West 54 Street, Suite 800, New York, NY 10019. 10-86

Thoughtstorm! The software for the Human mind. Color brochure. Inquire: **Star's Edge Research,** 353 W. Church St., Elmira, NY 14905. 6-81

We help put people into the computer business, at home with their computer! Our guides and manuals provide the methods, forms, letters and techniques to start you earning money with your computer. Computer Services Business Manual - $10.50; Writing Computer Programs for Profit - $5.95; Computer Consultant Handbook - $7.95. FREE BROCHURE. **JV Technologies,** POB 563, Ludington, MI 49431. 9-84

Weightloss Breakthrough! Lose weight easily! Increase your energy! Space-age food used by NASA! No hunger pains! Look great! Feel great! Complete details-$1. Send to: **A&S Marketing,** Dept. FTCS, 623 N. Lincoln, Lakeview, MI 48850. 9-81

Would you like to earn $30.00 an hour with your personal computer and belong to a nationwide organization of small to medium sized, data processing companies. Also, sell name brand computers, printers, and software. Business can be operated out of your home. Send $3.00 for information brochure to **Computer Data Services, Inc.,** 1655 South Dupont Hwy., Dover, DE 19901. 9-85

American Semiconductor®

256K $1.99!

THE *BARE* XT TURBO SYSTEM

$399. *"Looks, tastes, and acts like the IBM, AND, it's 100% COMPATIBLE!"*

Portable and lap top clones now available

CHIPS

41256K-150	$ 2.39
41256K-200	1.99
4164	.99
8087-3	119.00
8087-2	155.00
80287-3	175.00
80287-8	295.00
NEC V-20	14.00

WINCHESTER DRIVES

(5¼" & 3½")

10MB Portable Shock Mount (40g's)	$325.
20MB Half Height ST225	325.
20MB Portable Shock Mount	350.
30MB RLL XT Compatible Kit	499.
Hardcards Available	☎

HIGH-SPEED HARD DRIVES (RT-AT-XT-RLL Compatible)

20MB AT/Hi-Speed	$499.
30MB AT/Hi-Speed	599.
50-160MB	☎
60MB PRIAM	$999.

PERIPHERALS

Composite Monitor	$ 99.
Color Monitors AS LOW AS	235.
HiRes Monochrome Monitors	119.

ADD-ON CARDS

Monochrome Card	$ 79.
Monochrome Graphics WITH Port	99.
Color Graphics Card	79.
Printer Port	39.
Multi I.O. WITH FLOPPY CONTROLLER	99.
Multi Function (6-PAK Lookalike) Card 0–384K	125.
Hard Drive Controller	99.
Hard/Floppy Controller	190.
EGA	275.
Floppy Controller w/Cables	49.

IRWIN B/U TAPE SYSTEM . . . $449.

5 YEAR WARRANTY ON WDHDC

WINCHESTER DRIVE KITS

20MB Half Height	$379.
10MB Portable Shock Mount	449.
20MB 3½ Shock Mount Portables	379.
30MB Half Height (RLL)	499.
30MB Full Height	699.

ALL DRIVE KITS INCLUDE: CONTROLLER CARD/ CABLES/MANUAL

FLOPPY DISK DRIVES

Mother Boards (Expandable to 640K)	
XT Compatible	$139.
Turbo XT Compatible	179.
DSDD 48 TPI-360K Half Height:	
QUME/TRAK #142	69.
QUME/IBM Logo	99.

MISCELLANEOUS

Portable Compact Clone XT	$ 799.
AT Clones	1100.
XT Power Supplies	89.
XT/AT Keyboards	69.
Hayes Compatible Modem 300/1200 INT/EXT	199.
Mini UPS (200W)	335.
Ext. Drive Case (80W Power Supply)	169.

"OURS does what THEIRS does for a whole lot *LESS*!"...CALL TODAY!

20MB Winchester Drive Kit $379.00! CALL FOR DETAILS

TO ORDER TOLL FREE CALL

1-800-237-5758

EXT. 813

Vendor Line Inside Florida 813-961-9444

TECHNICAL SUPPORT 813-961-5584

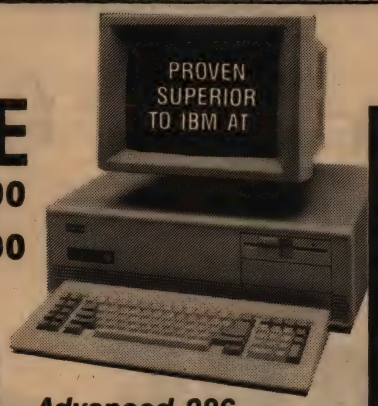
PRICES SUBJECT TO CHANGE DUE TO AVAILABILITY AND MARKET FLUCTUATIONS.

CALL TODAY FOR ITEMS NOT LISTED AND DEALER PRICING. ADD 3.2% FOR M/C & VISA PURCHASES.

16520 N. Florida Ave., Lutz, Florida 33549

UNFAIR ADVANTAGE

Advanced 286 $1495.00
Advanced PC/XT $699.00



Advanced PC/XT

- FCC/UL Approved
- IBM PC/XT™ Compatible
- (1) 360K Floppy
- 256K Expandable to 640K
- Serial, Parallel, LCD
- RGB Color Graphics
- Composite Video
- Mouse & Keyboard
- 10Mb Hard Disk (Add $200.00)

HARDWARE

Advanced Cards
Largest Selection!

A210 Color/Printer/Graphics	$88.00
A220 Color/Graphics/Video/Mouse	95.00
A230 Mono/Color/Graphics/132 Col.	149.00
A231 Color/Mono (Runs 2 Monitors)	149.00
A240 Mono/Printer Graphics	79.00
A250 Mono/Printer/Graphics/132 Col.	119.00
A260 Mono/Printer	75.00
A271 EGA/256K RAM - Short Card	239.00
A320 384 Multi-function Card - 0K	99.00
A330 Multi-function - Short Card	99.00
A340 Multi-function/Floppy	119.00
A350 640K RAM Card - 0K	59.00
A410 Floppy Card - 2 Drives	39.00
A420 Floppy Card - 4 Drives	49.00
A510 Parallel/Serial, Optional Serial	69.00
A520 Parallel Card	35.00
A530 Serial Card	49.00
A610 AT 2Mb Multi-function - 0K	139.00
A612 AT 2.5Mb RAM Card	139.00
A620 AT 3Mb RAM Card	159.00
A630 AT Parallel/Serial, Optional Ser	59.00
A640 AT Floppy/Hard Controller	249.00
A650 AT I/O Card - Ser/Par/Clk	95.00
A950 AT Motherboard - 0K	529.00
A955 XT Motherboard - 0K	119.00
A960 XT Turbo Motherboard - 0K	139.00

AST - (1 to 2 Year Warranty)

AST5251-11	$575.00
AST5251-12	575.00
RAMpage Expandable to 2Mb	Call
RAMpage AT Expandable to 2Mb	Call
(Both boards support EMS & EEMS)	
Advantage 128K	365.00

AST SPECIALS
REDUCED TO MOVE LIMITED SUPPLY

SixPak Plus w/64K	Only $166.00
Including Sidekick 1.5 & DESKview	
SixPak Plus 384K	Only 219.00
Combo Plus - 0K	Only 66.00
Combo Plus - 64K	Only 79.00
(Makes superior I/O Device)	
Reach Modem 1200 Baud	199.00
AST Colorgraphics Card	99.00
(Original Factory Box)	

HAYES - (2 Year Warranty)

Smartmodem 1200	$385.00

HARDWARE

Smartmodem 1200B	349.00
Smartmodem 2400 (Int)	575.00
Smartmodem 2400B	535.00
Hayes Comp. 1200 (Ext)	169.95
Hayes Comp. 1200 (Int) w/SW	149.95
Hayes Comp. 2400 (Ext)	349.00

HERCULES

Hercules Color Card	$166.00
Hercules Plus Graphics NEW	239.00

INTEL - (5 Year Warranty)

Above Board PC, AT, PS	New Price
FREE OFFER Windows thru 12-31	
8087 or 80287 thru 9-30	

KEYTRONICS

5150 Keyboard	$159.95
5151 Deluxe Keyboard	169.95
5153 w/Touchpad	285.00
PC Jr Numeric Keypad	29.95

MICROSOFT

Microsoft Mouse	$139.00
Microsoft Bus Version	155.00

MOUSE SYSTEMS - (3 Year War.)

PC Mouse w/Paint Plus	$138.00
PC Mouse w/Ready & Paint	148.00
ACP Mouse w/Keyboard SALE	149.00

PROMETHEUS - (1 Yr Warranty)

ProModem 1200 w/Mite (Int)	$299.00
ProModem 1200B	259.00
Alphanumeric/Options Processor	79.00

TECMAR CLOSEOUTS

	List	ACP
SpeechMaster	$395	$195.00
1st Mate w/64K	389	169.00
Voice Recognition	995	169.00
3rd Mate	445	195.00
Powerlink 3270	1099	399.00
Phonegate 2400	695	295.00

Call for Complete List

PRINTERS

BROTHER

M1109 Dot Matrix	$249.00
M1509 Dot Matrix	399.00

DIABLO/XEROX

620 Serial LQP	was 1495 now $299.00
620 API LQP	349.00
620 D36 (36cps)	399.00
Tractor	was 395 now $25.00
F-21 Sheet Feeder	was 896 now 199.00
630 Sheet Feeder	219.00
Cable for 620 (to IBM)	29.00
Diablo P-11 or S-11 100cps	129.95
Diablo P-31 or S-31 Wide	199.95

EPSON - (1 Year Warranty)

FX85 160cps NLQ	$375.00
FX286 160cps Wide	549.00

TOSHIBA

P321 "3 in 1" LQ Printer sale	$515.00
P351 24 Pin w/Serial & Parallel	1085.00
New Toshiba Color Printer	Call

8 PEN PLOTTER - Limited Special
Roland's DXY-800 Flatbed X-Y Plotter. Formerly sold for $995.00. While Supply lasts your price only $399.00
Inc. Parallel/Serial Interface. IBM Compatible.

MONITORS

Samsung TTL IBM Green	$88.00
Samsung TTL IBM Amber	98.00
ACP 12" Softwhite TTL IBM	139.00
Mitsubishi RGB Color	259.00
TECA EGA Monitor	419.00

PRINCETON GRAPHICS

HX-12 RGB (640x240)	$445.00
MAX-12E Amber TTL	175.00
SR-12	575.00
HX-12E (690x350)	545.00

Advanced 286

- FCC/UL Approved
- IBM AT™ Compatible
- 6/8 MHz SW Switchable
- 640K, 200 Watts
- 1.2 Mb Floppy Controller
- Hard/Floppy Controller
- Phoenix BIOS
- MS-DOS 3.2 (Add $85.00)
- GW Basic (Add $95.00)
- 30Mb 35mS HD (Add $700)

EGA SPECIALS!
EGA UPGRADE KIT
Includes:
NEC Multisync
ACP/EGA Card **$719.00**

NEC Multisync	$499.00
ACP RGB Color	399.00
RIX EGA Paint	59.00
Paradise Autoswitch	355.00
Genoa EGA	295.00
Orchid Turbo EGA	585.00
Quad EGA Plus	365.00
Advanced EGA, 256K, Short Card	365.00
EGA Mouse	119.00

PGA SPECIALS
IBM Professional, Limited Quatity

IBM PGA Card, Regular $2995 Sale	995.00
IBM PGA Monitor, Reg $995 Sale	695.00

HARD DISK CARDS

20Mb MEGA Card	$479.00
20Mb Mountain Card	599.00

Call for 30Mb Card

BEST BACK-UP

Use same back-up device we use at ACP.

AlphaMicro VCR Back-up Card	$399.00
AlphaMicro VCR	699.00

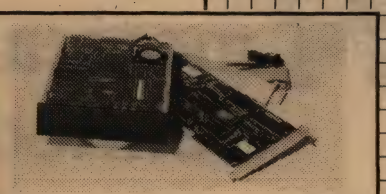
NOTE: Works on any VCR.

DISK DRIVES

Toshiba FDD4403 3½"w/5¼" Bezel	$129.00
Toshiba ND04D PC, XT 360K	105.00
Toshiba ND04E-G AT, 360K	115.00
Toshiba ND08DE-G 1.2Mb	149.00
TEAC FD-55B	105.00

DISKETTES (Box of 10)

DS/DD for PC/XT (40tpi)	
• ACP Generic	$6.00
• Verbatim Datalife	16.00
• Maxell MD-2	19.00
• Fuji	16.00
DS/Hi-Density for AT (96tpi)	
• Verbatim	$32.00
• Maxell	35.00
• Fuji	26.00
SS/DD for Apple II etc.	
• ACP Flippy (Use both sides)	$6.00
• Verbatim	14.00
• Maxell MD-1	17.00
• Fuji	14.00
MacIntosh/IBM Conv. 3½"	
• Maxell MF-2DD	$52.00
Fuji MF-2DD (135tpi)	52.00
Flip-Sort (75 Disks)	$14.00
ACP 5¼" Disk Holder	9.00
ACP 3½" Disk Holder	12.00
Head Cleaner 5¼" or 8"	9.00
Perfect Computercare Kit	29.00



20 Mb Upgrade $449 **20 Mb Mega card $479**
Package (1 Yr War) Plug-in 1 Yr War)

SEAGATE FOR AT
(Linear Voice Coil Activator)

20 Mb for AT	$499.00
30Mb for AT	$599.00
40Mb for AT	$799.00

(Inc. Cable & Mounting Rails)

IRWIN TAPE BACK-UP
for AT **$399.00**

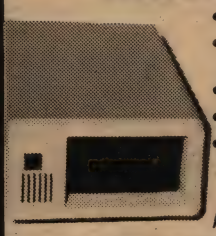
PC UPGRADE SPECIAL

$14.95	SET OF (9) 64K RAMS
$36.95	SET OF (9) 256K RAMS
$139.95	8087 COPROCESSOR
$169.95	8087-2 COPROCESSOR
$225.00	80287 - 6-8 Mhz
$269.00	80287-8 - 10 MHz

1200 Baud Hayes™ Comp. Modem
Short Card with Software.
List $299 ACP $149.95
1200 XT/AT (Ext.) $169.95

10Mb HARD DISK
$189.00

SYSGEN 20/20



- 20Mb Hard Disk
- 20Mb Tape Back-up
- New/Factory Box
- PC/XT/AT Comp.
- External Complete

Reg. Retail $3300
ACP Only **$888**

Grid Compass MS-DOS Lap Computer Demo Sale Call for Details. 100's in Stock as Low as **$849.00**

SEAGATE ST225
20Mb Hard Disk **$349.95**

MS-DOS LAPTOP
Sharp PC5000
Formerly sold for $1995. 2800 in stock new in box w/factory warranty! Vol. discounts available.
ACP SUPER LOW PRICE $395.00

128K Bubble	$79.00	Supercom	59.00
Printer	150.00	Superwriter	88.00
Wordstar	129.00	Color Plotter	149.00

Modem 300 Baud	99.00
PFS File/Report	129.00
Soft Carry Case	10.00
Soft Key Plotter SW	35.00

SEAGATE ST4038-30Mb
Hi-Speed, 40 mS, AT Compatible Drive **$599.00**

★ Advanced Computer Products Inc.

TOLL FREE
800-854-8230
CA Residents 714-558-8813

OUR POLICY
- No Surcharge for VISA or Mastercard.
- Volume purchasing agreements available.
- Orders subject to availablity. • Supply limited on certain items.
- Pricing subject to change without notice.
- ACP Retail Store pricing may vary. Not responsible for typos.

Mail Order: P.O. Box 17329 Irvine, CA 92713
Retail: 1310 B E. Edinger, Santa Ana, CA 92705

CORPORATE BUYERS - CALL
GILLES, LOUANE, MANDI, MIKE or DAVE

ZENITH and 80 MICROCOMPUTER SERVICES, INC.

2 names you can trust!

ZENITH Z-148 PC

PROCESSOR: 8088 Dual Speed (Standard and Turbo)
Socket for 8087 Co-Processor

MEMORY: 256K (Expandable to 640K)

DISK DRIVES: 2-360K High Quality/Direct Drive

KEYBOARD: Detached XT Style
LED Indicators for CAPS/NUM Lock

I/O PORTS: 1 Serial
1 Centronics Parallel

VIDEO: Composite Monochrome
RGB Color

EXPANSION SLOTS: 0 (1 Optional)

DOS: Microsoft MS—DOS 3.1

POWER SUPPLY: 100 Watts
2 Device Connectors
UL Recognized

WARRANTY: One Year Parts and Labor

APPROVALS: FCC Class B

$1199.00

80 MICRO TURBO XT PLUS

PROCESSOR: 8088 Dual Speed (Standard and Turbo)
NEC V-20 (Optional at No Charge)
Socket for 8087 Co-Processor

MEMORY: Fully Populated with 640K

DISK DRIVES: 2-360K High Quality/Direct Drive

KEYBOARD: Detached AT Style
LED Indicators for CAPS/NUM Lock
Works with Both XT and AT Compatibles

I/O PORTS: 1 Serial (2nd Optional)
1 Centronics Parallel
1 Joystick/Game
Battery Backed Clock/Calendar

VIDEO: Composite Monochrome
Composite Color
RGB Color
TTL Monochrome (Optional)

EXPANSION SLOTS: 8 Total
6 Available this Configuration

DOS: Microsoft MS—DOS 3.1/3.2

POWER SUPPLY: 135 Watts
4 Device Connectors
UL Recognized

WARRANTY: One Year Parts and Labor

APPROVALS: FCC Class B

$995.00

Other configurations available, call for free price list

Dealers, Vars, Systems Houses Inquiries Invited.

80 MICROCOMPUTER SERVICES, INC.
2245 Central Avenue,
Schenectady, NY 12304
(518)393-2494

MSO
MICRO SUPPLY ORGANIZATION INC.

the giveaway.

MSO, the leader in cost effective computer systems, is offering the Sanyo MBC 1200 at a **giveaway price!**

The MBC 1200 Accounting Software -G/L, A/R, A/P, Inventory and Payroll modules retail for $398 per module. **Now from MSO you pay only $99 per module or all five for $299!** Second disk drive with fan-option available. **COMPAT** disk utility available.

SPECIFICATIONS:
- Two Z-80A (main and subsidiary) CPUs with no-wait mode for fast execution, substantial memory capacity (RAM 64KB, ROM 4KB).
- High-resolution full graphic function with 640 x 400 dot matrix display.
- Choice of 33 or 40 line text mode.
- CP/M operating system complete with interpreter, editor and all utilities.
- Easy-to-use Sanyo graphic BASIC.
- One (MBC 1200) or two (MBC 1250) internal double-sided, double-density, double-track, 5¼" slim-type 640KB formatted mini floppy disk drives.
- Special design featuring detachable ergonomic keyboard with coiled cable.
- Interfaces for Centronics printer and one RS-232C port provided.

20 meg internal hard drive sub-system for Sanyo MBC 1100, 1160 & 1200 $599 (with purchase)

Printer specials with purchase

805/393-2247

All systems carry full 90 day warranty.
CASH PRICE ONLY
Check in advance. Add 3% for VISA/MC. Shipping & handling charges will be added to each order.

For our catalog with complete details and prices, send $2 to:

Micro Supply Organization, Inc.
4909 Stockdale Hwy. #180
Bakersfield, CA 93309

15% Restocking on Returned Orders

VISA MasterCard

SANYO
MBC 1200

FREE SOFTWARE
- Wordstar • Spellstar
- Calcstar • Mailmerge
- Infostar • Basic

$399

MSO
MICRO SUPPLY ORGANIZATION INC.

dare to compare.

Don't be fooled. No hidden cost!

Complete MS-DOS/CPM GEM-ST™ Super Turbo

In keeping with industry trends MSO is bringing our customers high performance P.C. compatibles and accessories. MSO takes the P.C. compatible to maximum performance with its SUPER TURBO. The GEM-ST™ features the V20-8 chip which runs at three times the speed of the IBM-PC XT* and also runs CPM 8080 software.
The GEM-ST™ comes complete with the MS-DOS operating system, Read and Run CPM, full Instructional Documentation, Utility software, **MSO is also offering the Micropro Wordstar Professional Software package. This package includes: Wordstar, Mailmerge, Correctstar, Starindex, Datastar and a G.L. Accounting System.** The GEM-ST™ is a complete turnkey system with everything necessary to plug in and operate.

USER SUPPORT HOT LINE

805/393-2247

All systems carry full 90 day warranty.
CASH PRICE ONLY
Check in advance. Add 3% for VISA/MC. Shipping & handling charges will be added to each order.

For our catalog with complete details and prices, send $2.00 to:

Micro Supply Organization, Inc.
4909 Stockdale Hwy. #180
Bakersfield, CA 93309

MON. - FRI. 7am - 5pm PST•SAT. 9am - 5pm PST
*IBM is a registered trademark of the IBM Corporation.
15% restocking on returned orders
*GEM is a registered trademark of GEM computer products

Super Turbo V20 - 8mHz

$1299

FREE
Micropro Professional Software Package

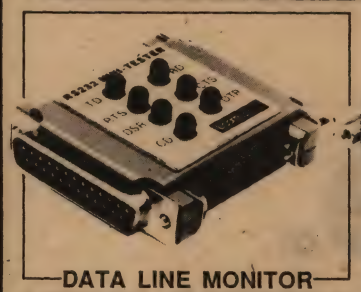
This Super Turbo P.C. runs IBM software and CPM 8080 programs

- CPU - V20-8 8mHz Super Chip runs *IBM compatible software at 3 times the speed of the IBM-XT and CP/M 8080 software.
- 8087 Math Processor optional
- 256K RAM on mother board expandable to 640K
- ROM 8K Bios
- 6 empty slots for expansion
- 2 serial ports one optional with expansion kit
- 1 parallel port
- 1 game port
- Clock calendar with software
- Hi-Res monographics video board
- Floppy controller
- Dual Floppy Drives 360K ea.
- 150 watt XT Power Supply
- AT style compatible keyboard
- Hi-Res TTL Green or Amber 12" monitor
- MS-DOS operating system and manual.
- Instructional Documentation and Utility Software
- Assembled and tested in America
- **Optional internal 20 meg sub system for Super Turbo add $499**

Special printer pricing with purchase of above computer.

L-COM® Shopper's Guide

Products for the ELECTRONIC & COMPUTER Industry



DATA LINE MONITOR

A miniature DATA LINE MONITOR allows the user to determine the status of the seven key signals of the RS-232 data path. All 25 pins wired through, and dedicated Red LEDs report the status of:

- Transmit Data (TD) pin 2
- Receive Data (RD) pin 3
- Request to Send (RTS) pin 4
- Clear to Send (CTS) pin 5
- Data Set Ready (DSR) pin 6
- Data Carrier Detect (DCD) pin 8
- Data Terminal Ready (DTR) pin 20

MODEL	CASE MAT'L	1-9	10-24	25-99
DLM	Plastic	29.95	27.25	23.96
DLMS	Metal	32.95	29.98	26.36

RS232 JUMPER BOX

DATA JUMPER BOX Used to customize RS-232 interface devices. All 25 pins of the D-Sub Connectors terminate to 25 solder pads. The PC Board layout makes it easy for you. Supplied with 25 wires already stripped for permanent wiring to suit your needs. Many interfaces could be built, null modems, pin reversers, you name it! Supplied with PC board soldered in place. Your choice of plastic (DJB) or chrome metal (DJBS) snap-on covers. Appropriate hardware is unassembled. Select gender type..

MODEL	GENDER	1-9	10-24	25-99
DJB	M-F	19.75	17.97	15.80
DJBS	M-F	20.85	18.97	16.68
DJBS-F	F-F	20.85	18.97	16.68
DJBS-M	M-M	20.85	18.97	16.68

RS232 ADAPTOR KIT

DO IT YOURSELF KIT - Allows the creation of many types of RS-232 adaptors. The following components are included in the assortment. D-sub connectors have solder cup terminations to accept wire leads.

1 ea. type 25 pin D-Sub connectors, gender depends on model selected.
2 ea. Snap-On halfcovers - UL 94V0 for DIY type, chrome metal for DIYS types.
1 set Hardware for each connector end

MODEL	GENDER	1-9	10-24	25-99
DIY	M-F	9.65	8.96	7.88
DIYS	M-F	11.95	10.87	9.56
DIYS-F	F-F	11.95	10.87	9.56
DIYS-M	M-M	11.95	10.87	9.56

MINI BREAKOUT BOX

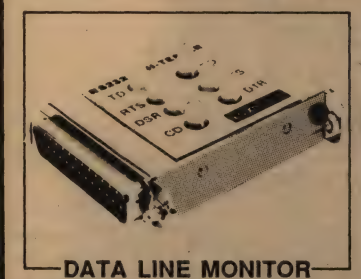
DATA TEST ADAPTOR aids in the design of new interfaces such as printers and terminals. Now it's easy to configure cable connections or signal paths. All 25 pins of each D-Sub connector terminate to individual patch jacks to allow inter-wiring in any pattern. Complete with 25 jumper wires. Metal construction. All pins are identified on label.

MODEL	GENDER	1-9	10-24	25-99
DTAS	M-F	29.95	27.25	23.96

RS232 PROTECTORS

SURGE PROTECTORS guard against voltage spikes entering your RS232 ports. MOVs on crucial lines clamp electrical surges above 26V without affecting operation. Mounts in series, all all lines are wired thru. Surges clamp to pin 1. All metal case construction.

MODEL	LINES	1-9	10-24	25-99
DSPS-3	2, 3, 7	24.95	22.70	19.96
DSPS-4	2, 3, 7, 20	26.95	24.52	21.56
DSPS-5	2, 3, 4, 5, 7	28.95	26.34	23.16
DSPS-5B	2, 3, 4, 7, 20	28.95	26.34	23.16
DSPS-6	2, 3, 4, 5, 7 ,20	30.95	28.16	24.76
DSPS-8	2, 3, 4, 5, 6, 8, 20	34.95	31.80	27.96



DATA LINE MONITOR

New Deluxe Version of our popular DATA LINE MONITOR is now available with red and green LEDs to indicate Hi, Low, or Open condition. Chromed metal shell construction.

MODEL	GENDER	1-9	10-24	25-99
DLMS-2	M-F	39.95	36.35	31.96

RS232 to CENTRONICS

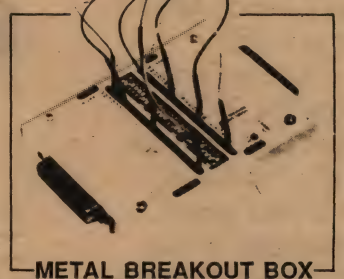
SERIAL PARALLEL ADAPTOR KIT - Used to customize your own printer adaptors. The D-Sub 25 has 25 flying leads, ready to be soldered to any of the 36 pins on the Centronic connector. DJBA-2 has a female D-Sub & a Male Centronics..

MODEL	GENDER	1-9	10-24	25-99
DJBA	M-M	24.95	22.70	19.96
DJBA-2	F-M	24.95	22.70	19.96

GENDER CHANGER

GENDER CHANGER mates Centronic parallel printer cables of the wrong gender. Features an all metal construction. 2 models satisfy all needs. Mating Centronic cable available, ask for details.

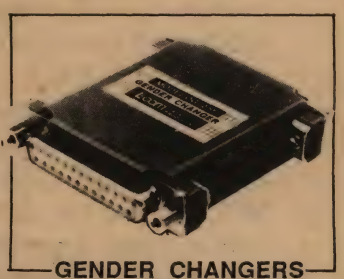
MODEL	GENDER	1-9	10-24	25-99
DGS-36F	F-F	29.95	27.25	23.96
DGS-36M	M-M	29.95	27.25	23.96



METAL BREAKOUT BOX

An economical BREAKOUT BOX allows easy configuration of the RS-232 Interface. Each line of the interface, with the exception of pin 1 can be programmed by 24 independent slide switches. 24 pr. test points also provided on each side of test switch to allow patching and monitoring. Supplied with 10 jumper cables and carry case. Steel construction.

MODEL	GENDER	1-9	10-24	25-99
RS-50	M-F	59.95	54.55	47.96

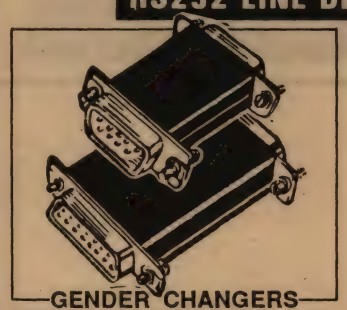


GENDER CHANGERS

GENDER CHANGERS - Are handy devices enabling the mating of wrong sex cables to equipment or to other cables. ABS encased or metalized to offer maximum shielding. Will withstand extensive abuse. Four models fill most requirements. For RS-232 use.

MODEL	GENDER	1-9	10-24	25-99
DG-25F	F-F	16.95	15.42	13.56
DG-25M	M-M	16.95	15.42	13.56
DGS-25F	F-F	17.95	16.33	14.36
DGS-25M	M-M	17.95	16.33	14.36

RS232 LINE DEVICES SAVE TIME & AGGRAVATION



GENDER CHANGERS

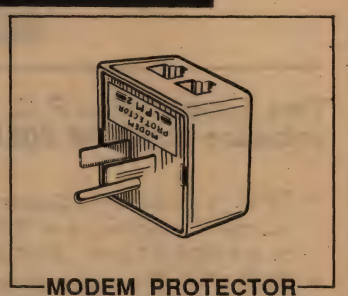
GENDER CHANGERS mate wrong sex cables. Heavy duty insulated metal enclosure to stand wear and tear. Your choice of 9, 15, 25 & 37 pin D-Sub connections. Model number determines type. All in stock for immediate delivery.

MODEL	GENDER	1-9	10-24	25-99
MG-9F	F-F	15.95	14.51	12.76
MG-9M	M-M	15.95	14.51	12.76
MG-15F	F-F	18.95	17.24	15.16
MG-15M	M-M	18.95	17.24	15.16
MG-25F	F-F	23.95	21.79	19.16
MG-25M	M-M	23.95	21.79	19.16
MG-37F	F-F	27.95	25.43	22.36
MG-37M	M-M	27.95	25.43	22.36

COAX ELIMINATOR

These COAXIAL BALUNS when used in pairs allow IBM 3270 terminals to be connected over one twisted telephone pair to the IBM 3274 controller. Accepts both RJ11 (Jack) and twisted pair (screws). Transmit data up to 1000 ft. without any signal degradation or change in response time.

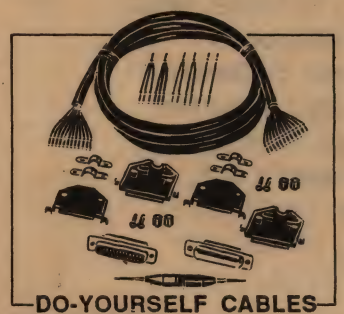
MODEL	BNC	1-9	10-24	25-99
CF-11	Female	44.50	41.83	39.16
CM-11	Male	44.50	41.83	39.16



MODEM PROTECTOR

SURGE SUPPRESSION PROTECTS against lightning and other electrical disturbances. Our 2-stage design provides a sophisticated blend of high speed, gas discharge and voltage limiting in nano seconds. Proper ground is most important & L-com has solved this by making use of your grounded AC outlet. The protector recovers automatically in preparation for next surge.

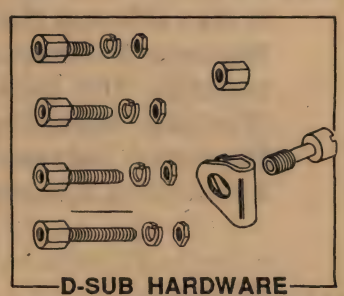
MODEL	1-9	10-24	25-99
LPM-3	34.50	31.05	27.60



DO-YOURSELF CABLES

RS-232 CABLE KITS allow you to create your own Serial data cable. 12 conductor cable terminates to gold plated pins; simply insert into appropriate holes with tool provided. Everything you need is supplied. Please specify gender when ordering, (*) M-M or M-F.

MODEL-FT	(*)Specify	1-9	10-24	25-99
CK25(*)-5	M-M or M-F	13.95	13.25	12.56
CK25(*)-10	M-M or M-F	15.95	15.15	14.36
CK25(*)-15	M-M or M-F	17.95	17.05	16.16
CK25(*)-25	M-M or M-F	21.95	20.85	19.76



D-SUB HARDWARE

Standard 4-40 HARDWARE mates with all D-Subs. Priced at, and sold only in multiples of 50.

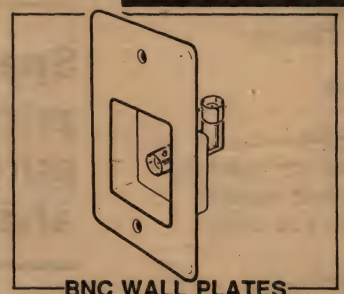
MODEL	DESC.	1-9	10-24	25-99
SDG-250	Jack Screw	8.25	8.03	7.44
SDG-300	Jack Screw	8.95	8.50	7.88
SDG-400	Jack Screw	9.45	8.98	8.32
SDG-500	Jack Screw	9.95	9.45	8.76
SDH	Standoff	5.45	5.18	4.80
SDF-1	Screw and Retainer	9.45	8.98	8.32

IF YOU DON'T SEE IT We probably have it in stock or we could make it for you.

BULKHEAD ADAPTOR

We're first to offer this GPIB FEED-THRU ADAPTOR which allows IEEE-488 cables to pass between panels; All metal construction. We also have a complete line of GPIB cables & accessories available from stock. Ask for details.

MODEL	GENDER	1-9	10-24	25-99
CIB24-BA	M-F	22.52	21.38	20.25



BNC WALL PLATES

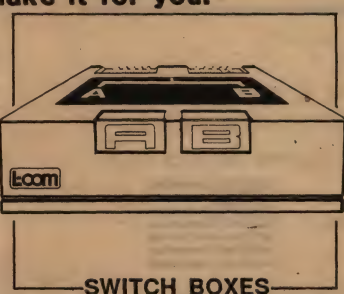
An ivory RECESSED WALL PLATE with a specially designed right angle BNC feed-thru connector. Ideal for narrow partitions. No protrusions when left unused. Brand new product complete with Mounting Bracket.

MODEL	CONNECTOR	1-9	10-24	25-99
WPR102	BNC/BNC	9.95	9.45	8.76

MULTIPLEX CONVERTOR

Simplify WANG WORK STATION wiring from troublesome dual coax to a twisted pair telephone wires. Reliable communication between host and terminal up to 600' (42xx) or 900' (22xx). Convertors are maintenance free. Two required, one on each end, BNC & TNC to RJ-11.

MODEL	1-9	10-24	25-99
CW-2	74.00	69.56	65.12



SWITCH BOXES

High quality TRANSFER SWITCH BOXES at reasonable prices. High impact case; gold plated self-cleaning switch contacts; Mil-grade PCB; pushbutton action, color matches computer equipment. Choice of RS-232 or Centronics types.

MODEL	TYPE	1-9	10-24	25-99
DU2500	Serial	59.00	56.05	53.10
DU3600	Parallel	79.00	75.05	71.10

IDEA CATALOG

Over 1500 COMPUTER ACCESSORY products, many are unique to help solve problems. A convenient shoppers guide which provides technical information, comparisons and quantity pricing. Includes coaxial & multi wire data cables, connectors, IEEE-488, switch boxes, patch panels; testers, baluns, surge protectors, etc. Same day shipping of almost every item listed. Call Customer Service today for your FREE copy.

L-COM®

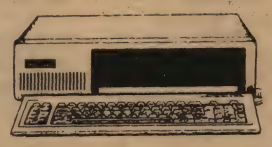
Shipping and Handling: $4.50, USA/$9.50, Canada

DATA PRODUCTS 1755 Osgood St., No. Andover, MA 01845

ORDER TOLL FREE 800-343-1455

BASIC SYSTEM

Only $499.00



add $35.00 for 8mHz turbo mode

- PC/XT compatible 4.77 mHz
- 8 expansion slots
- 256K RAM expandable to 640K
- 360K ½ ht. floppy drive
- Floppy drive controller
- 135 watt power supply
- PC/XT 5150 style keyboard
- Metal case with speaker
- Fully assembled

MONOCHROME GRAPHIC CARD

- High-Res Character
- 720x348 Graphics Mode
- 80x25Text Mode
- Runs LOTUS 1-2-3 etc.
- With Parallel Printer Port...$109

MULTI FUNCTION

- 2 Serial Ports
- 1 Parallel Port
- Game Port
- Clock/Calendar.....$89.95

COLOR GRAPHIC/ DISPLAY ADAPTER

- TTL/Composite Level Outputs
- 320x200 (color)
- 640x200 (B&W).....$89

MAXISWITCH KEYBOARD XT/AT

$89.95

ATI MEGAGRAPH EGA

$199.00

MEGAGRAPH EGA PLUS

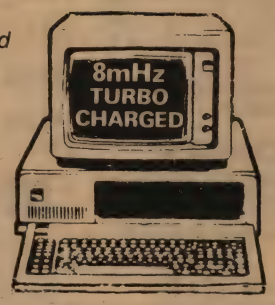
$269.00

EVEREX EVERCOM MODEM

- Fully Hayes Compatible
- With Evercom Software
- Provides popular terminal emulators
- 300 or 1200 Baud operation
- Automatic Answering and Dialing
- Choice of tone or pulse dialing.....$128.95

"PLAIN VANILLA"

** Monitor/Adapter Not Included*



FEATURES:

- IBM PC-XT Compatible BIOS
- Intel 8 mHz 8088 Microprocessor
- Two DS/DD 360K Floppy Drives
- 640K RAM on-board
- Built in Clock/Calendar with Battery Back-up
- Easily Accessible Case/Chassis for Expansion
- Two RS-232 Serial Ports
- Two Centronics Parallel Ports
- Game Port
- 135 watt 110-220 VAC Power Supply
- "Switchable" XT/AT Style Keyboard
- Six Available Slots (with basic configuration)
- Full Range of Options Available
- Optional 8087 Math Coprocessor Support
- RAM Disk Software with Print Spooling Function

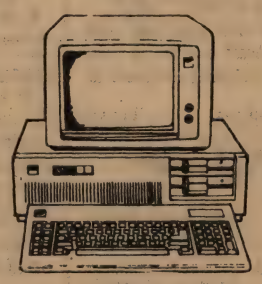
PC Designs

$795.00

"TURBO-AT"

FEATURES:

- Fully IBM "AT" Compatible BIOS
- SETUP Program that will configure: RAM Size, Hard Disk Type, Floppy Drive Type, Time and Date, Coprocessor (80287), Video Adapter Type
- 8 mHz Intel 80286 Microprocessor
- Optional 6 mHz operation
- Optional 80287-8 Math Co-Processor
- One Megabyte of On-board RAM (expandable to 3 megabytes of user addressable Ram in basic system)
- Accepts 64K DRAMs or 256K DRAMs
- Two RS-232 Asynchronous Communications Ports (COM1 and COM2)
- Two Centronics Parallel Ports (one on display card)
- Princeton Graphics MAX12 Amber Monochrome
- High Resolution Monochrome Graphics Display Card
- Combination Floppy and Hard Disk Controller (controls two floppies and two hard drives)
- 192 watt 110/220 VAC Switching Power Supply
- Five Available Expansion Slots
- Battery Backed-Up CMOS Clock/Calendar
- Choice of 360K or 1.2 Megabyte Floppy Disk Drive
- "AT" Style Case and Chassis
- Low Profile IBM "Selectric" Type AT compatible keyboard



PC Designs

$1750.00

SILVER-REED EXP 500 LQ

Letter Quality Printer

$249.95

TRACTOR FOR ABOVE

$95

HIGH QUALITY COMPOSITE MONOCHROME MONITOR

$73,95

SEGATE 20 MEG HD WITH CONTROLLER

$419.00

TOSHIBA 360K AT ½ HEIGHT FLOPPY

$114

TOSHIBA 360K XT ½ HEIGHT FLOPPY

$109.00

MANY HIGH PERFORMANCE HARD DISK DRIVES AVAILABLE CALL FOR PRICING

TOSHIBA 1.2 MBYTE

- Half height floppy.....$169.00

EVEREX "GRAPHICS EDGE"

$219.00

MONITORS

Samsung Monochrome.....$99.00
Princeton MAX12E.....$159.95
Princeton HX12.....$439.95
Princeton HX12E.....$539.95
NEC Multisync.....$599.95

PRINTERS

Okidata 182.....$269.95
Okidata 183.....$459.95
Okidata 192.....$409.95
Okidata 193.....$549.95
Okidata 292.....$529.95
Okidata 293.....$775.00
Silver-Reed EXP 500 LQ.....$249.95
Silver-Reed Tractor.....$95.00

TAPE DRIVES

Teac Internal 20 Mbyte.....$609.95
Wantek 60 Mbyte Streaming...$775.00

VIDEO DISPLAY CARDS

Everex "The Edge".....$219.00
ATI "Graphics Solution.....$239.00

30 DAY NO RISK MONEY BACK GUARANTEE - FULL ONE YEAR WARRANTY ON ALL SYSTEMS

CompuLink tm
INTERNATIONAL, INC.
P.O. Box 150876 • Irving, Texas 75015

ORDERING INFORMATION

We ship anywhere in Continental USA daily via UPS. Free shipping on orders over $200 (UPS ground service). Orders under $200 add $3.00 for S&H. All merchandise is new with manufacturers warranty. Prices and availability subject to change without further notice. We accept cashier's check, money order, VISA, and Master Card. C.O.D. orders please add $5, cash or cashiers check only. 10% restocking charge for orders refused or returned. All returns for warranty repair or defective goods require authorization number (please call). We do not guarantee compatibility for all systems. Brand names listed are registered trademarks. All sales are final. Please include telephone numbers with your written order. Texas residents add 6⅛% sales tax.

VISA

24 HOUR ORDER HOTLINE:
(214) 251-1111
After hours orders by answering machine

MasterCard

PUBLIC DOMAIN PROGRAMS— $3.75 DISK MS DOS COMPATIBLE

PD#PROGRAM TITLE
1 PC-File (Data Base)
2 PC-Finance (Accounting)
3 PC-Checkbook
4 PC-Modem (Communications)
5 PC-Spreadsheet
6 Home Finance Program
7 Free Calc - Spreadsheet
8 Pc-Basic (runs Basic prog.)
9 PC-Calculator
10 Point of Sale Program
11 Misc. DOS Super Utilities
12 8087 Sampler Programs
13 Misc Appl., Music, Dates
14 Poor Man's Mouse
15 PC DOS Help
16 Word Proces. for Kids
17 Time & Money-Finance Mngr.
18 PC-Musician
19 Property Mngr. (DBase II)
20 Silly Diagnostics
21 Micro Accounting System
22 File Manager
23 A Cheap Assembler, RAM Disk
24 PC Graphics 1
25 PC Graphics 2
26 Portfolio Evaluation System
27 Newkey - Keyboard Program
28 Star Trek Programs
29 Games 1
30 Games 2
31 Basic Games
32 Basic Games
33 Misc Basic Games
34 Galaxy Trek w/Graphics
35 CPU Speed Test
36 Benchmarks

V-20 SPEED-UP

5MHZ—$10.95
8MHZ—$12.95

DEFECTIVE IBM COMPATABLE COMPONENTS

Disk Drives—DSD, need alignment $40
Keyboards $25
Power Supplies $20
Floppy Contr $15
TTL monitors.....$40
Motherboards $65

DAVONG HARD DISK CONTROLLER, FOR IBM COMPATIBLE SYS $49.95

8" SHUGART SA801

$65.00

—FULL HEIGHT
—SINGLE SIDED
—600 KB FORMATTED

8" SHUGART SA850 DSDD—$70.00

SHUGART SA 1004
10 MEG
HARD DRIVE
8" DRIVE
NEW $125.00

DTC CONTROLLER FOR ABOVE DRIVE.....$65.00

ATARI GAME ROMS

An assortment of 10 Atari game ROMs. Simply open any Atari cartridge & replace the existing ROM with a new one. Play another 10 games instantly.
Stk# ROM-10....10/$2.50

LASER DISK PLAYER

BY PHILIPS ELECT.
Orig. sold for $3500
Working cond.
#LDP-100.....$129

MONITOR CABLE DB9 MALE TO FEMALE

2A LONG
#CAB99.....$3.00

IBM PC-JR. REPLACEMENT POWER SUPPLY

Stk#WTN-4860 .....$9.95

ATARI REPLACEMENT POWER SUPPLIES

11.5 VDC @1.95 AMP
Stk# WTN-195 .....$6.75

TI 99-4A COMPUTER SURPLUS

KEYBOARD
PN 900181 — 48 keys. Measures 4"x9". Terminates to a 15 pin connector $3.75

PS-4A

SWITCHING POWER SUPPLY
INPUT: 14 VAC to 25.5 VAC
OUTPUT: +12VDC@350MA
+5VDC@1.2AMP
$3.50

WALL PLUG ADAPTER
TN18 — used with the above power supply. Output 18VAC @ 45VA.
TN-21$3.50ea or 10/$19.95

CASSETTE INTERFACE CABLE
CAB-93—has DB-9 connector on one side to 3 RCA phono jacks on the other end .....$1.50 ea. or 10/$10

TI GAME CABLE
CIC-15—one end has a DB25 female going to 2 DB15 female connectors. Cable is 6' long $4

TOCOM 55 PLUS CABLE TV CONVERTER 55 CHANNEL CONVERTER

Mainboard—$7.50
Power Supp.—$4.50
We received a large shipment of these cable converters. Good savings!

12 VAC @ 250ma TRANSFORMER TN12A — 2/$1.50

WIRE TEST PROBE WIRE

18 guage rubber coated. Red, black, white or blue 100'/$13

IBM REPLACEMENT KEYBOARD CABLE IBM KEYBOARD CORD

Replacement cord for all keyboards. 6' long cream color. Stk. #KC-509....$4.95

EAGLE TTL MONITOR & FRAME — GREEN HIGH RESOLUTION

12" Monitor mfg. by Panasonic originally used in Eagle Comp. monitors. Complete w/frame. Requires 12VDC @ 1AMP power. Schematic included.
Stk# K224E4B $19.95

COMMODORE SURPLUS COLOR PRINTER/PLOTTER FITS ALL MODELS

$44.95
Stk. #CA-15

KEYBOARDS Microswitch

ASCII encoded keyboard, mfg. by Micro Switch. Has 92 keys. Part #92SC40-16-1.
Stk# KBD-92.....$9.95

EXTERNAL 5¼" DRIVE HOUSING

Paradyne Computer Housing can be used as an external case to house hard or floppy disk drives. Contains 150W power supply. IBM colors.
Stk #CASE-P $57

CPM BOOT DISKETTE FOR $3.75 V-20 Processor

BUILD YOUR OWN EPROM ERASER 115VAC Black Light (Ultra Violet)

115 volt ultra violet light, with lamp, ballast and in-line cord switch. Just build enclosure to finish.
Stk. #EPB-125 .....$12.50

TI COMPUTER FLOPPY DRIVE CABLES

SINGLE FLOPPY DRIVE CABLE
Cable is 15" long with 34 pin card edge & 34 pin header conn.
CFS-15 ...$2.00 ea or 10/$14
DUAL FLOPPY CABLE
Cable is 34" long w/3 34 pin edge connectors.
CFS-30 ...$4.00 ea or 10/$25

SWEET "P" 100 PLOTTER

- IBM Compatable
- Parallel Port
- 8½x11 Paper
- 3 Pens Included

$120

PLOTTER ACCESSORIES

Apple II Bus. Graphics software pkg. Stk #SP-300 .....$14.95
The Primer Plotter by Prime Soft Corp. A plotting pkg. for most applications. Stk #SW-350 $29.95
EPSTART Macintosh printing on an Epson printer. Stk #SW-400 .....$14.95
Overhead transparency paper for the Sweet P 100. 25 sheets per pkg. Stk #SW-175 .....$3.00
BPS Business Graphics for the IBM personal computer. Stk #SW-225 .....$14.95

WALL PLUG ADAPTERS

6VDC @ 300ma
$1.75 or 10/$12.50

TRANSFORMERS

Stk# PRI Secondary Price
(VAC) (VAC)
TN-6.3 117 6.3 @ 300ma .....$.125
TN-12 117 12 @ 400ma .....$.135
TN-24A 117 24 @ 200ma .....$.125
TN-24B 117 24ct. @ 3.6 Amp $3.50

ISOLATION TRANSFORMER

117VAC
117VAC @ 125VAC
Mfg. by Signal Trans
$3.00 each — 10/$20.00

VITEK CABLE CONVERTER

Model No. TC-1M Converter. Both Mid-Band & VHF frequencies. Has built in power supply. Units are new & in working cond.
Stk# TC-1M $9.95

MFG. BY ELSTON COMMODORE SURPLUS 12" GREEN SCREEN MONITOR

Composite video input built in power supply. Requires 18VAC XFMR.
Useable on IBM's $19.95
Transformer for above $3.50

3 VOLT LITHIUM BATTERY

Used as battery back-up on most multi-function cards. Mallory BR-2325
$1.00 EACH — 10/$5
Holders for above 10/$5

COMPUTER SPEAKERS

2.25" 8 ohm, 25 watts. This is the same speaker that IBM uses. Excellent for computer builders.
Stk. #SPK-8....$.65

MONITOR CABLE DB9 MALE TO MALE

2A LONG
#CAB99.....$3.00

NEC-14 PRINTER INTERFACE BOARD

$19.95

TI SURPLUS

TI 990 main chasis-power supply w/card cage. Stk. #990-main $99
TI Silent 700 terminal w/keybd & modem. Stk. #TI-700 ..$39.95
Omni 800 printer Mod. 820, KSR serial printer in working cond. Stk. #KSR-820.....$149
Diablo Series 30 power sup. Stk. #PS-30 .....$19.95
Diablo Series 30 Disk drive model 31 w/housing & P.S. Stk. #DR-3Q $59.95

SURPLUS FROM EAGLE COMPUTER MODEL 1600 MAIN CPU MOTHERBOARD

$79.95 (IBM Compat.)

- 8086-2 Processor (8 MHz)
- 128K RAM (512K Max)
- 8 I/O Slots (IBM Compat.)
- BIOS ROM included
- Schematics included

COMPUTER CHESS GAME

NEW

MILTON BRADLEY CHESS GAME
Electronic circuit board removed from famous toy maker's game. Board has 6502 processor. 74LS series IC's. Buzzer & many other useful components. Boards are complete and un-damaged. MB part #7924243001.
BD-792 .....$3.95 ea. 10/$24

NEW! MILTON BRADLEY XFMR

Input: 120 VAC — Output: 12VAC CT @ 1.7 AMP
UL Approved
Stk #TN4243-33 .....$4.95

MOTOROLA 5" TTL MONITOR

$19.95

Complete with all electronics. Requires 12 VDC @ 1.5 AMPS
Stk. #MON-5

SPECIAL TRANSISTOR SALE

STK. #T-500
500 PC 2N2222
Un-Marked — $3.50

EDGE CONNECTORS

All are 1.56" Spacing.
22/44 Edge Connector
$2.00

31/62 connector for IBM PC board. 1" spacing $2.00

4" COOLING FAN 120 VAC NEW

Stk. #FN-4—$6.50

MAGNETS

2" bar magnet w/tape on 1 side
2/$1.00

POWER SUPPLY 5V@35AMP

$45.00

CRYSTALS

Frequency	Case	Price
40 MHZ	HC18	$1.25
6 OMHZ	HC18	$1.25
8 OMHZ	HC18	$1.25
10 7MHZ	HC18	$.75
14 318MHZ	HC18	$1.25

VOLTAGE REGULATORS

7805 5V 1.5 amp
7812 12v 1.5amp
7824 24v 1.5amp
7905 5v 1.5amp
7905 5v 1.5 amp
7912 12v 1.5 amp
$.43 EACH

IC BARGAINS

LS00 ...$.15	LS123 ..$.42	LS240 ..$.60
LS01 ...$.15	LS124 .$1.40	LS241 ..$.60
LS02 ...$.15	LS125 ..$.30	LS242 ..$.90
LS03 ...$.15	LS126 ..$.40	LS243 ..$.80
LS04 ...$.15	LS132 ..$.40	LS244 ..$.50
LS05 ...$.15	LS133 ..$.25	LS245 ..$.50
LS08 ...$.15	LS138 ..$.35	LS251 ..$.45
LS09 ...$.15	LS139 ..$.30	LS253 ..$.40
LS10 ...$.15	LS145 ..$.55	LS257 ..$.45
LS11 ...$.15	LS151 ..$.40	LS258 ..$.50
LS12 ...$.25	LS153 ..$.30	LS259 .$1.00
LS13 ...$.30	LS154 ..$.75	LS260 ..$.40
LS14 ...$.25	LS155 ..$.40	LS266 ..$.30
LS15 ...$.30	LS156 ..$.40	LS273 ..$.75
LS20 ...$.15	LS157 ..$.30	LS279 ..$.30
LS21 ...$.18	LS158 ..$.40	LS280 ..$.80
LS27 ...$.21	LS160 ..$.50	LS283 ..$.35
LS30 ...$.15	LS161 ..$.40	LS290 ..$.65
LS32 ...$.20	LS162 ..$.60	LS293 ..$.75
LS33 ...$.25	LS163 ..$.35	LS298 ..$.65
LS37 ...$.30	LS164 ..$.50	LS299 .$1.50
LS38 ...$.25	LS165 ..$.80	LS322 .$2.50
LS42 ...$.30	LS166 ..$.75	LS323 .$2.25
LS51 ...$.20	LS169 .$1.00	LS364 ..$.90
LS54 ...$.25	LS174 ..$.35	LS366 ..$.40
LS55 ...$.20	LS175 ..$.35	LS367 ..$.40
LS73 ...$.30	LS181 .$1.25	LS368 ..$.30
LS74 ...$.23	LS191 ..$.80	LS373 ..$.50
LS85 ...$.45	LS192 ..$.70	LS374 ..$.75
LS86 ...$.19	LS193 ..$.74	LS375 ..$.35
LS93 ...$.50	LS194 ..$.60	LS377 ..$.90
LS107 ..$.28	LS195 ..$.50	LS378 ..$.80
LS109 ..$.20	LS196 ..$.70	LS390 ..$.80
LS112 ..$.30	LS197 ..$.75	LS393 ..$.75
LS122 ..$.35	LS221 ..$.50	LS399 .$1.00
		LS670 .$1.24

POWER SUPPLY

General purpose compact power supply. 3 outputs: +5V @ 1 Amp. +12V @ 1 Amp. & +24V @ 1 Amp. Power Transistors mounted on a heat sink. 2"x4" w/transformer. Stk. #PS-3P $4.49

COMPUTER GRADE CAPACITORS

Ass't of 10
Stk. #CCG-10 ....$2.50

DISKETTE LOOSE LEAF HOLDER

Vinyl Diskette Holder
Holds 2-5¼" diskettes. Has 3 hole punch to mount in standard loose leaf folder. Stk. #1 VIN-5 .....10/$2.50
For standard 8½x11

CIRCUIT BOARD BONANZA

Sound generator boards removed from electronic pin-ball games. Contains oscillators, control circuits & 2 watt audio amp. Experimenter's dream!!
$2 ea — 10/$12.50 w/schematics

5V & 12V REGULATOR BOARD
Regulator board containing 5V & 12V to 220 regulators, fuses, bridges, caps & I/O connectors. Size 2"x4" w/heatsinks.
REG-512 .....$3.50

RECTIFIER BOARD
Contains (4) 10 Amp bridges. (3) large filter caps & I/O conn. Size 4.5" & 8".
BRDG-4.....$2.50 ea or 10/$12.50

LINEAR & CMOS BONANZA
Circuit board removed from SINGER electronic calculators, has 20 linear & cmos IC's & a wealth of other parts.
BD-20 .....$2.50 ea or 10/$12.50

FULL HIGH FLOPPY DRIVES

MPI 525 DSDD 40 track "As Is" $29

74LS...IC ASSORT.

25/$1.89
Asst.-74

YUASA NP2.6-6 Rechargeable battery

6V@ 2.6AH
Stk. #VBAT-6 ...$9.95

VINYL DISKETTE HOLDER HOLDS ONE DISKETTE IN BOOK TYPE HOLDER

VIN-10.....$.65

DISK DRIVE RESISTOR PACK 150 OhmX 8

#PK-150 .....$1.00

ELECTRONIC GRAB-BAG

5lb's OF EVERYTHING
$3.95

OKIDATA 1/3 HIGH DSDD 40 TRACK DISK DRIVES

$45.00

CONNECTORS SOLDER POT DB CONNECTORS

PART#	PRICE
9P	$.59
9S	$.59
15P	$.69
15S	$.69
25P	$.79
25S	$.79

MACHINE PIN SOCKET

22 PIN GOLD PLATED SOCKET
5 Pcs. $1.00
Stk. #ICS-22M

DB HOODS

PART#	PRICE
9H	$.75
15H	$.80
25H	$.80
37H	$1.00

COMPUTER POWER CORDS

$1.75 EA OR 10/$12.50

SNAP ACTION SWITCH

MICRO-SWITCH ASS'T OF 10
$2.50
Stk. #500-10M

TANDON 55-4 QUAD DENSITY

½ HGT DRIVE $89.95
SUPPORTED BY DOS 3.2

13" OPEN FRAME RGB MONITOR BY CLINTON

MON-C6 $29.95

RIBBON CABLE

20 conductor spectra-strip with red marker stripe. 100' per roll. 28ga. stranded wire. WRIB-20 $.30/ft. or $25/roll

ULTRAVIOLET TUBES GOOD FOR EPROM ERASERS

110 VAC
$2.25 ea — 10/$15.00

COMPUTER PAPER

#P-9400 — 9½x11, 1 part 2700 sheets $26
#P9002 — 9½x11 2 part 1650 sheets $44
#9003 — 9½x11 3 part 1100 sheets $51

CABLES FOR IBM SYSTEMS

CAB-800 IBM Printer cable (Centronics).....$10
CAB-825 Serial cable, 6', DB25 male to male $10
CAB-835 Serial cable, 6', DB25 male to fem $10
CAB-600 RGB Ext. cable, 6', DB9 male to fem $10
CAB-500 6' keyboard ext. cable $5
CAB-550 6' composite video cable $2
CAB-600 Special 8 pin RGB to DB9 cable $13
CAB-300 6' IBM power cable ..$3
CAB-875 IBM/AT serial port cable $20
CAB-400 Dual 5.25" disk drive cable $17
CAB-425 Hard disk cable set .$10
CAB-450 AT cable set (hard & floppy) $25

KAYPRO SURPLUS

Kaypro Equipment
81 Series ROMS (K2).....$7
Keyboard Siemens w/case .$65

Kaypro Mainboards
K2 populated, tested ...$129
K10 tested $225
Pro-8 Upgrade kit $39

LOLIR — MAIN

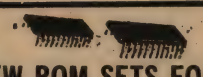
13933 N. Central #212
Dallas, TX 75243
1-214-234-8056

LOLIR AFFILIATES

Winner & Assoc.—Oklahoma City—405-946-2811
Comm-Tech—St. Louis—314-291-0114
Data World Dist.—Knoxville—615-691-2011

TERMS: Check or Money Order. COD's Add $1.90. TX Res. add 6% Tax. Please add $3.50 shipping. All out of stock items will be refunded.

PLEASE INCLUDE PHONE # W/MAIL ORDER



NEW ROM SETS FOR XT's & AT's

IMPROVED SPEED

Speed-up Bios for standard motherboard. If your system takes a long time to run format or diskcopy", this ROM's for you.

Stk# BROM-35.....$14.95

NETWORKING BIOS ROM

New ROM lets you run the Novell Network as well as others. Will work in Turbo boards but will not support the Turbo mode.

Stk# BROM-39.....$19.95

TEXAS ROM BIOS

A new 2 chip BIOS set that replaces the BIOS on your XT or Turbo XT motherboard. These eliminate many of the system & parity errors that occur. Also eliminates "lock-up" problems in some Turbo XT boards. IBM compatible.

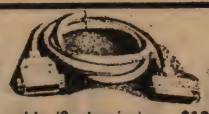
Stk# BROM-TX $24.95

TURBO XT SUPER ROM

If you think your Turbo board is fast — put this new BIOS ROM in it & hold your socks! This is the fastest ROM we've seen for a Turbo bd. yet.

Stk# BROM-FT $19.95

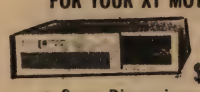
CABLES FOR IBM SYSTEMS



CAB-800	IBM Printer cable (Centronics)	$10
CAB-825	Serial cable, 6', DB25 male to male	$10
CAB-835	Serial cable, 6', DB25 male to fem.	$10
CAB-600	RGB Ext. cable, 6', DB9 male to fem	$10
CAB-500	6' keyboard ext. cable	$5
CAB-550	6' composite video cable	$2
CAB-600	Special 8 pin RGB to DB9 cable	$13
CAB-300	6' IBM power cable	$3
CAB-875	IBM/AT serial port cable	$20
CAB-400	Dual 5.25" disk drive cable	$17
CAB-425	Hard disk cable set	$10
CAB-450	AT cable set (hard & floppy)	$25

AT STYLE CASE

FOR YOUR XT MOTHERBOARD



NEW

$69

- Same Dimensions as XT case
- LED Indicators & key lock
- Complete mounting hardware

Stk. #CASE-75

CLONE TECH MANUALS

Clone builders manuals. Did you buy an IBM clone & didn't get any kind of operation manual? We put together some manuals on how to hook everything up, how it works & basic trouble-shooting techniques. Complete with schematics.

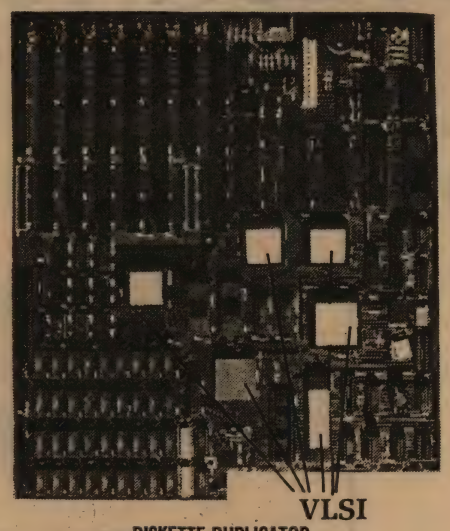
XT-Manual.....$19.95
AT-Manual.....$24.95

CLONE XT SCHEMATICS

with Waveforms for easy servicing

SCH-XT $9.95

BRAND NEW PRODUCT ATTAK-286™



- 80286 Running @ 8 MHz
- 80287 Socket
- VLSI Technology
- 1 Meg Memory on Board
- Phoenix ROM BIOS
- On Board Battery

$479.95 w/OK Installed

FORTIS PRINTERS

DOT MATRIX-200CPS
50 CPS NEAR LETTER QUALITY
SAME SPECS AS EPSON FX286
DM2010-80 COLUMN-$349
DM 2015-132 COLUMN-$429

NEW

DISKETTE DUPLICATOR

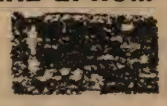
Stand-a-lone unit will copy information from one diskette—track to track—to another diskette. No computer needed! Copies all format diskettes as well as all copy protected diskettes. Takes only 45 seconds to copy. Extremely easy to use. **$795**

EXTERNAL DRIVE CASE & POWER SUPPLY

- 75 W Power Supp.
- Drive power connect.
- IBM Styling

$105

SUPER EXTERNAL EPROM PROGRAMMER



- 2716-27256 & Special Motorola MCM68764 & all "A" series EPROMS
- Connects thru parallel port
- Fast algorithm software

*** NOTE! IT IS ILLEGAL TO USE THIS DEVICE TO COPY REAL IBM ROMS**

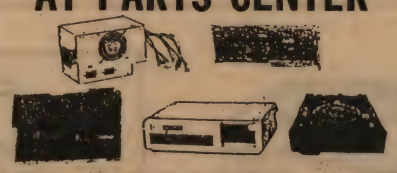
IBM ADD ON BOARDS

STOCK#	DESCRIPTION	PRICE
FDC-501	Floppy disk controller w/cable - 4 drives	$38
FDC-507	Floppy Cont. w/serial, parallel & clock	$95
HDC-515	Hard disk controller w/cables	$125
VID-401	Color Graphics Cards, IBM Specs	$60
VID-405	Magic Video card w/TTL, RGB, & Composite outputs 640x400 color, 640x352 monochrome	$185
VID-406	Monochrome (TTL) card	$75
VID-408	Hi-Res mono/graphics w/printer port Hercules compatible	$85
SIO-250	Serial port card (second serial opt.)	$35
PIO-255	Parallel printer card	$29
MFC-110	Short I/O, parallel, serial, clk/cal	$99
MFC-100	Multi-funct. w/para., ser., clok/cal & 384K Exp. No mem. installed, software	$90
MFC-120	576K memory expansion board (short card)	$39
EP-128	EPROM burner board, for IBM (2716-27128)	$129
RD-2	Bus Receiver & driver boards for exp. chasis	$149

SPECIAL BOARDS

Everex Enhancer EGA card .$249
Adaptec 2070A RLL hard disk contr. $185

AT PARTS CENTER



STOCK#	AT SYSTEM COMPONENTS	PRICE
MBD-AT	AT clone motherbd., dual speed (6&8 MHZ), 1 Meg. RAM, 0 watt state, clock, BIOS included, with OK installed	$499
HDC-525	Combination hard & floppy disk contr., mfg. by NCL, 4-layer bd	$195
CAB-525	Cable set for above controller	$20
HDC-526	AT controller for hard disk only by NCL, 16 bit bus.	$169
VID-425	Enhanced graphics adapter	$295
MFC-3002	Multi-func. w/para., ser. & 2 meg. memory exp. capability, w/OK memory	$225
MFC-110	Serial, Parallel & game pots	$85
PS-200	AT Power supply - 200 watt	$135
KYB-MAXI	Maxiswitch keyboard for AT or XT	$75
CASE-90	Case for At-slide type	$89
TFDD-1.2	Teac 1.2Meg floppy drive	$135

MONITORS

Thompson RGB — 560x200 — $285
NEC Multisync $549.00
Samsung TTL.....$89.95
Samsung Composite $64.95
Center TTL.....$84.95

HARD DRIVE KITS SPECIALS

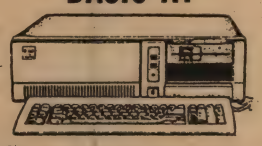
10 Meg & Controller.....$305
20 Meg & Controller $419
45 Meg & controller $725
130 Meg & controller $2400

MODEMS

(100% HAYES COMPAT.)

Everex 300/1200 Internal.....$149
Lytek 300/1200 External $149

BASIC AT



- 512K Memory (1 Meg Max)
- Keyboard
- 8 MHz Operation
- FCC Approved
- TEAC 1.2 Meg Drive
- WD Hard Floppy Controller

$1199

BASIC XT

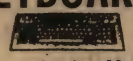
- STD Board w/256K
- AT Style Keyboard
- FCC Approval

$329

20 MEG SYSTEM FOR PORTABLE COMPUTERS

LAPINE 20 MEG-SHOCK MOUNTED-KONAN CONTROLLER $419

FCC APPROVED KEYBOARDS



KBMAXI — mfg. by Maxiswitch AT/XT selectable $79.95
KBMICRO — Mfg. by Microswitch 5151 Style - AT/XT selectable $99.00

IBM® AT CLONE SYSTEM

- 80286 Process @ 8 MHZ
- 640K RAM (1 meg. max)
- 20 meg. hard drive
- Dual floppy drives
- Monochrome graphics
- High Res. monochrome monitor
- I/O Ports
- Bundled Programs

$1795

3RD GENERATION TURBO SYSTEM

- 20 Meg Drive
- Super 4-layer MBD running @ 8MHZ
- Single DSDD Drive
- 640K Memory
- Fast BIOS
- Ser., Parallel, Game, clk-cal.
- Monochrome card & high res. monitor
- Cybex DOS manual
- Bundled programs

$1249

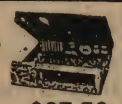
DISK DRIVES

TANDON 502 — DSDD
360K ½ hgt., 48 TPI..$79.95
TEAC 1.2 Meg (AT)...$135.00

POWER SUPPLY

135 WATT $69.00
150 Watt $75.00
200 Watt AT $100

CASES



Slide
Flip-Top **$37.50**

MOTHER BOARDS

STD XT-640
640K Max., 4.7 MHZ, 8 I/O slots, with 0 mem. $115

TURBO XT-640-7
640K Max., 5/7 MHZ, 2-layer board, tested with 9 mem. $130

TURBO XT-640-8A
640K Max., 5/8 MHZ, 2-layer board, tested with 0 mem $135

SUPER TURBO XT-640-8B
640K Max., 5/8 MHZ, 4-layer board, tested with 0 mem. $165

DEALER DIRECT SALES

LOLIR — MAIN
13933 N. Central #212
Dallas, TX 75243
1-214-234-8056

LOLIR—ADDISON, TX
15902 Midway
Addison, TX 75234
1-214-458-1886

LOLIR — FARMERS BRANCH, TX
3216 Beltline #606
Farmers Branch, TX 75234
1-214-241-2145

LOLIR — SAN ANTONIO, TX
218 E. Rhapsody
San Antonio, TX 78216
1-512-525-0261

LOLIR-FT. WORTH
8651 Hwy. 80 West #123
Ft. Worth, TX 76116
1-817-244-4277

LINDE TECHNOLOGY, Inc.

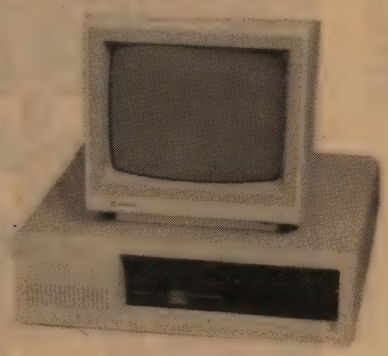
(213) 327-6431

START WITH OUR BASIC BARE-BONES UNIT

FCC APPROVED "B"

* 640K Motherboard w/64K
* Compatible BIOS
* K150 AT Style Keyboard
* Chassis
* Integrated & Tested
* FOAM SHIPPING BOX
** Add $20 for Turbo

$285.00



MONITORS

* Samsung Hi Res TTL w/Cables Green or Amber **$85.00**
* TVM 640x240 Switches 16 Color RGB/Green/Amber **$280.00**
* Tatung 1370 Hi Res EGA 720x400 **$450.00**
* Tatung 1380 Hi Res EGA 640x350 **$425.00**

DRIVES

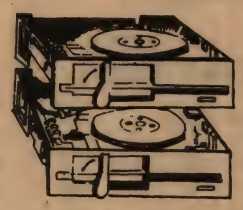
* Seagate ST225 w/Western Digital & Cables **$399.00**
* Microscience HH725 w/Adaptec & Cables **$385.00**
* CMI 6640 33MB Fast Acc. **$585.00**

SYSTEM

FCC APPROVED "B"

* 640K Motherboard w/640K
* Compatible BIOS
* 150 Watt Power Supply
* Monochrome Graphics —or—
* Color Graphics w/port
* Chassis
* K150 AT Style Keyboard
* Floppy Ctl. w/cables
* Integrated & Tested
* FOAM SHIPPING BOX
** Add $20 For Turbo

$440.00



FLOPPY DRIVES

* Teac 55BV **$95.00**
* Chinon F502L-II **$87.00**
* Hi Tech **$84.00**
* Toshiba (Grey) **$83.00**

HARD DISK DRIVE CABLES

1-50	51-100	51-500	501-1000
$3.50	$3.25	$3.15	$3.00

OPTIONS

Multi Disk I/O **$85.00**
5151 Keyboard **$62.00**
EGA Card Hi Res **$269.00**
MonoGraphics or Color Graphics Card **$70.00**
Floppy Ctl/Cable **$27.00**

Many More — Just Call

BOARDS ONLY ..... **CALL**

I/C'S — CHIPS

8087 Math Co-Processor 5 Mghz **$115.00**
V-20 NEC 5 Mghz **$11.50**
64K Memory Chips 150 NS ..... **CALL**
256K Memory Chips 150 NS ..... **CALL**
D27128D New **$2.50**
D27128D Erased **$2.00**
2764A New, E PROMS **$3.75**
2764-25 Erased, E PROMS **$2.25**

SPECIALS OF THE MONTH

Monochrome High Res Text Cards **$35.00**
Western Digital SWX1 w/cables **$95.00**
Western Digital 1002 WAH "AT" Hard Drive Controller **$189.00**
Adaptec 2010 Controller w/cables **$85.00**
20MB Hard Card (Lapine & Omti) **$495.00**
Interdyne Tape Drive Back-Up Partial ..... **CALL**
Okidata Plug & Play **$95.00**

(213) 327-6431

C.O.D ADD $3.00

*** All systems configured to your requirements**
*** CALL FOR QUANTITY DISCOUNTS**

MASTERCARD and VISA, ADD 4%

!!! IN STOCK !!! !!! IMMEDIATE DELIVERY !!!

AT Compatible Enhanced Complete System

NEW

ONLY $2095

FREE PC-DOS OR MS-DOS BOOK

- Run Lotus 1-2-3, Flight Simulator Symphony,
- DBase II & III Auto CAD Wordstar and more...
- IBM PC/AT Fully Compatible Motherboard with 1M Bytes, "0" wait state, Bios.
- 6 or 8 MHZ 80286 Microprocessor
- Metal Case
- Keyboard
- 200W Power Supply
- Serial/Parallel Ports
- FDC/HDD Controller (W.D.C.)
- 1.2 MB Floppy Drive (TEAC)
- 20M Hard Disk
- 360K Floppy Drive (TEAC)
- Monochrome Graphics Card w/Printer Port
- TTL High Resolution Monochrome Monitor
- Fully Assembled and Tested
- (1M and "0" Wait-State Optional)

ADD-ON FOR PC/XT AND COMPATIBLE

- **Floppy** Disk Controller $49
- **Multi-Function** Card (OK) $89
- **Color** Graphics Card $79
- **Monochrome** Graphics Card ... $99
- **Disk** I/O (or Multi I/O) $99
- **5151** Keyboard $79
- **2M** Bytes Rambank $175
- **150W** Power Supply $79
- **135W** Power Supply $69
- **Metal** Case $49
- **Keyboard** (5150) $59
- **Eprom** Programmer (for 1) $109
- **Eprom** Programmer (for 4) $129
- **Game** Port $29
- **Joystick** $22
- **Turbo** Case $55

AT ADD-ON

- **Serial/Parallel** Card $79
- **200 W** Power Supply $109
- **360k** Floppy $99
- **FDC/HDD** Controller $219
- **3 M** Multifunction (OK) $189
- **Case** $79
- **Keyboard (5060)** $79
- **Motherboard,** IM Bios, 6M/8M Hz $675
- **Keyboard** (5161) $89
- **1.2M** Bytes Floppy $129

MODEM

- 1200/300 Baud
- Hayes 1200 Fully Compatible
- Tone or Pusle Dialing
- Bell 212/103
- Auto Dial/Answer
- Auto Speed Selection
- Work with SCCOM, XTALK, etc.

INTERNAL	EXTERNAL
$145	$155

PC/XT COMPATIBLE TURBO SYSTEM

640K ENHANCED MONOCHROME SYSTEM

RUNS 4.77 MHZ OR 8 MHZ
3.1 TIMES FASTER THAN REGULAR PC/XT

SPECIAL

FREE PC-DOS OR MS-DOS BOOK

INCLUDING:

- Runs Lotus 1-2-3, Flight Simulator, Symphony, DBase II & III, Wordstar Auto CAD, and more...
- Nice packing and complete manuals
- IBM™ PC/XT Fully compatible motherboard with 640K and Bios
- Serial/Parallel/Game ports
- Clock/Calendar
- 4.77 MHZ or 8 MHZ, Hardware and Software switchable
- NEC V20 CPU
- 2 DS/DD Slim Drive
- Special Turbo Metal case with light indicator and speed selection
- 135W Power supply, AT look-alike keyboard
- Seagate (ST-225) 20M Bytes Hard Disk, w/W.D.C.
- Monochrome Graphics Card (720x348), w/Printer port
- TTL High Resolution Monochrome Monitor (Amber/Green).
- Other configurations available

ONLY $1349

THIS MONTH SPECIAL

- **Logitech Mouse** $85
- **EGA & EGA Monitor** $720
- **EGA & NEC Multisync** $799
- **Seagate 20MB w/W.D.C.** Formatted, 6 months warranty $395
- **Irwin 10MB/20MB Tape Back-up** Unformatted, 1 year warranty ..... $339/$459
- **Seagate 4026 (20MB)** $495
- **Seagate 4038 (30MB)** $595
- **Seagate 4051 (40 MB)** $695

TERMS:

1. CA Residents add 6% Sales Tax.
2. Visa or MasterCard welcome
3. COD adds additional $3. Cashier's check only
4. Free shipping for prepaid orders (Visa not included)
5. All products come with 180 days warranty.

SUPREME USA, INC.

6481 ORANGETHORPE AVE. #9
BUENA PARK, CA 90620
(714) 739-5250, 739-5264

DEALER AND OEM INQUIRIES WELCOME

(IBM is a trademark of IBM Co.) (SCOM & Hayes are trademarks of Hayes Microcomputer Inc.) (XTALK is a trademark of Microstuf.)

IBM® PC/XT COMPATIBLE

PROFESSIONAL SYSTEM

- PC/XT compatible 4.77 MHz 8 expanion I/O motherboard
- 256 K RAM Memory on board
- 360 K ½HT. floppy drive
- Floppy disk Controller card
- Monochrom graphic card w/parallel printer port
- 12" high resolution monochrom monitor
- 135W power supply
- PC/XT style keyboard
- Metal case with speaker

■ Only 655.95

OPTIONAL:

20 MB Hard Disk w/W.D. Controller	415.00
Extra 360K Drive	80.00

MONITORS

Samsung TTL (Grn)	$69.00
Samsung TTL (Amb)	$75.00
Color RGB (Mitsubishi)	$265.00

5¼" DS/DD Diskette

Box of 10	$6.50

- F. C. C. APPROVED
- FULLY ASSEMBLED
- 100% BURN-IN
- 100% TESTED
- 1 YEAR LIMITED WARRANTY

BASE SYSTEM

- PC/XT compatible 4.77 MHz 8 expansion I/O motherboard
- 256K RAM Memory on board
- 360K ½HT. floppy drive
- Floppy disk Controller, card
- Color graphic card/ RGB and composite output
- 12" composite Amber monitor
- 135W power supply
- PC/XT style keyboard
- Metal case with speaker

■ Only 589.95

COLOR SYSTEM

- PC/XT compatible 4.77 MHz 8 Expanion I/O Motherboard
- 640 K RAM Memory on board
- 360 K ½HT. floppy drive
- Floppy disk Controller card
- Color graphic card/ RGB and composite output
- 13" high resolution RGB color Monitor
- 135W power supply
- PC/XT style keyboard
- Metal case with speaker

■ Only 899.95

PRINTER

Panasonic

KX-P1080	$215.00
KX-P1091	255.00

Riteman

Riteman Plus	$190.00
Riteman II	275.00
Riteman 15	450.00
Printer Cable	$ 10.00

TO ORDER 1-213-327-9300

No C.O.D. No open account. Only prepaid or Credit card orders.
Add 8% shipping and handling fee. California residents add 6½% Sales Tax.

ROMANICUS CORPORATION
1539 W. 139th St. Gardena, CA 90249
9:00 am — 5:00 pm. Monday — Friday

DEALER WELCOME VISA MasterCard

IBM® is a registrated tradmark of int's Bus. Machines Corp.

GO BEYOND IBM COMPATABILITY TO ZENITH

NORTHEAST COMPUTRONICS
"A"
FUTURE
FOR EVERYONE

1-800-843-9659

WE SERVICE WHAT WE SELL
ONE YEAR PARTS AND LABOR ON ALL HARDWARE

NORTHEAST COMPUTRONICS
4874 SOUTH U.S. 23
GREENBUSH, MI 48738

VISA MasterCard

ZENITH data systems

ZF-148-01 One drive/0k memory*	$ 899
ZF-148-41 One drive/2exp slots/clk*	$1099
ZF-148-42 Two drive/mono monitor*	$1099
ZW-148-41 20MB/1exp slot/clk*	$1899
ZF-158-41 One drive/6exp slots*	$1525
ZF-158-42 Two drive/6exp slots*	$1650
ZW-158-41 20Mb/One drive/5exp slots*	$2099
ZFL-171-42 LCD Portable/Dual Disk	$1799
ZFL-181-42 LCD Port/3.5"Dual disk	$1847
ZF-241-81 1.2MB/512k/AT compatiable	$2650
ZW-241-82 20MB/1.2MB/512k/AT comp.	$3299

* 256k,5/8MHZ CPU,360k drives,MS-DOS incl. also Serial/Parallel/RGB/Composite Ports

ZENITH TERMINALS

Z-22	Lear & Televideo	$479
Z-39	DEC VT-100	$549
Z-49	Amber or Green DEC VT-102	$649
ZTX-11	ASCII/300baud/Keyboard	$379

ZENITH MONITORS

ZVM-1220 Composite, 12"Amber	$119
ZVM-1230 Composite, 12"Green	$119
ZVM-1240 TTL, 12"Amber	$189
ZVM-1330 RGB Hi-Res Color	$485
ZVM-1360 640x480, hi-Res, RGB	Call
NEC Multisync Intelligent Monitor 13"	$650

MASS STORAGE

Mountain 20MB Hard Card..1 1/2slot	$925
20MB SeagateST225 & 10MB Syquest removable cartridge, controller card,cables	$1685
20MB Seagate Kit, 65ms access, controller, connecting hardware	$585
20MB Seagate, 65ms access/drive only	$480
20MB Seagate, 85ms access/drive only	$445
TEAC MT2ST 20MB Tape Kit (internal)	$650
CT-500 Tapes for MT2ST	$ 27
VideoTrax Data Backup by Alpha Micro	$775

MODEMS

Hayes Smartmodem 1200 (external)	$398
Hayes Smartmodem 1200B w/Smartcom II	$368
Hayes Smartmodem 2400 (external)	$598
Hayes Smartmodem 2400B w/Smartcom II	$559
100% Hayes Compatiable w/software 300/1200 baud (external) RS232 cable	$199

POWER ACCESSORIES

Monitor Tilt and Swivel with builtin Power Controller & Surge Protector RFI/EMI +more A super combo at an introductory price	$ 99
HD Surge Strip six outlet 15amp	$ 34
HD Surge Strip six outlet 10amp	$ 29
Power Director switched 4 outlet	$ 59
UPS RAM PC-200 40minutes at 100w	$425
150 watt IBM power supply direct repl.	$129
Voltguard six outlet 1875W protector	$ 34

EPSON 1

"EPSON #1 AND BUILT LIKE IT"
EPSON OF AMERICA

LX-80 100cps/friction/tractor/NLQ	$259
FX-286 200cps/friction/tractor/NLQ	$599
Homewriter 10 with C64 Interface	$237
DX-10 para/ser/IEEE Diablo 630 comp	$245
DX-20 " " " " " "	$339
DX-35 " " " " " "	$627
LQ800 80 col./letter quality/graphic	$599
LQ1000 132 col./ " " "	$775
SQ-2000 Hi-Speed 176/106CPS Ink Jet	$1799
Printer Stand 80 col.black universal	$ 16
Printer Stand 132 col. acrylic smoke	$ 49

PRINTER CABLES

Zenith PC & IBM comps. to Epson/uns	$7.95
" " " " " /sheilded	$9.95
WE MAKE CUSTOM CABLES TO ORDER	CALL

FAST SERVICE, YEARS OF EXPERIENCE
PRINTERS, MODEMS, MONITORS

ADD-ON BOARDS FOR PCs

RAM

Apparat 256k installed	$ 99
ABM 0-384k/clock w-battery/256k incl	$179
AST,Sixpak Premium EMS Bd. 512k-1Mb	$365
AST,Rampage-PC,0-2Mb,w/256k,Desqview	$395
AST,Rampage-AT,0-2Mb,w/512k,Desqview	$595
Chips 256k 150ns quality type set 9ea	$ 27
AST,Ramvantage,0-3Mb,(AT),w/128k	$395
AST,I/O Min.Bd. 1 ser.port, 1 clock	$129
AST,I/O Plus II w/1 serial port	$129
AST,I/O Game Adapter kit	$ 39
AST,I/O Parallel Printer Port Kit	$ 39
AST,I/O Serial Port Kit	$ 39
I/O-100XT clk/ser/par/2nd ser option	$105
I/O-200AT same as above (no clock) AT	$115
I/O-200XT as I/O-100XT w/game port	$120
MI/O-100 Floppy crtl/clk/ser/par/game	$165

MULTIFUNCTION CARDS

MF-100A 384k/ser/par/clk/batt/softw.	$165
MF-640 640k/2nd ser option/as above	$190
2nd Serial Option for I/O-100XT/MF640	$39
AST MEGAPLUS II,256k,2 ser/1 para	$685

DISPLAY CARDS

Paradise Hi-Res Card graphics/RGB	$275
Paradise Modular Graphics Card	$245
TECMAR Graphics Master	$466
CG-100 Video Display RGB/comp color	$115
CPG-100 as above w/para port	$125
MG-200 Mono Graphics w/para/ser opt.	$137

DISK DRIVES

Toshiba ND-04D 1/2 Height/360k/XT	$119
Toshiba ND-04DE-G 1/2 Height/360k/AT	$139
Toshiba ND-08DE-G 1/2 Hght/1.2MB/AT	$189
Matsushita/Panasonic JU-455 PC/XT	$125

KEYBOARDS

Ram 5151 Business 100% PC/XT Comp.	$159

"WHEN PRICE MEANS THE MOST"
GENERIC COMPATIABLE

GENADYNE RESEARCH BasicXT Unit 100% COMP.
*Enclosure FCC Approved IBM style
*Keyboard 84 keys, 100% PC/XT Comp.
* Large Return, Shift & CTRL
* LED Numeric & Shiftlock
*CPU Motherbroad 8 slot expansion
* Expandable to 640k (0k installed)
* Power Supply 135watt w/harness
* 5 Megabytes of Free Software
** SUPER SALE PRICE .....

AST RESEARCH INC.

CALL FOR PRICING
DEALERS OR DISTRIBUTORS

EPSON OF AMERICA	ZENITH DATA SYSTEMS
SOFTWARE WIZARDRY	ACTRIX COMPUTER
NEC	PANASONIC
CHORUS SYSTEMS	TOSHIBA
DYNAX PRINTERS	PEARLSOFT SOFTWARE
SAMNA WORD	MICROSOFT
IBM COMPUTERS	CANON PRINTERS
GENERIC CAD	SYQUEST DRIVES
I^2 INTERFACE	FARM MGMT SYSTEMS

NEW!!! ZENITH PORTABLE ZFL-181-42 NEW!!!
DUAL 3.5" DISK DRIVES
OPTIONAL 51/4" EXTERNAL
NEW LCD 12 TO 1 SCREEN
640K, MS-DOS 3.2, CLOCK
SERIAL, PARALLEL, RGB & COMP.
5 HOUR BATTERY + MORE
$1847 INTRO PRICE

HELD OVER!!
*SPECIAL OF THE MONTH ....ONLY $2249
COMPLETE SYSTEM FOR BUSINESS ACCOUNTING
*ZW148-41 ZDS Computer w/20Mb hard disk
*ZVM1220 or ZVM1230 Monitor w/cable
*LX-80 Epson Printer w/9'cable
*Voltguard Six Outlet Surge Protector
*Printer Stand black wire type
*Intergrated Accounting Pearl
**Accounts Receivable
**Accounts Payable
**Payroll
**Inventory *UNBEATABLE*
**General Ledger *PRICE*
**Flexset
*Software Installed on Hard Disk

pearlsoft
Wilsonville, Oregon

NORTHEAST COMPUTRONICS CHOICE SOFTWARE
SOFTWARE WE HAVE TESTED & USE

Accounting

Intergrated Accounting Pearl ar/ap/inv/pay/gl/flexset	$495
Intergrated Basic Accounting Pearl ar/ap/inv/pay/gl/flex/invoicing++	$595
BPI Accounts Payable	$377
BPI Inventory	$499
BPI General Accounting	$377
BPI Accounts Receivable	$377
BPI Payroll	$377
Managing Your Money 2.0 by Meca	$119
Dollars & Sense 2.0 by Monogram	$115

Wordprocessing

Samna Word III Turbo 3.0	$298
Samna Word + Turbo 3.1	$360
Word Perfect 4.1	$234
Microsoft WORD Version 3	$239
Wordstar 2000	$257
Wordstar 2000+	$308
Wordstar Professional	$249
Multimate	$225
Multimate Lan Pack (networking)	$519

Spreadsheets & Intergrated Combos

Multiplan	$125
Lotus 123	$327
Symphony	$459
Framework II	$385
Supercalc 3	$239
Supercalc 2	$159
Peachtext 5000	$169
Samna Word +	$360

Data Base Management Systems

Personal Pearl (New 3.0) Special	$199
Dbase II by Ashton Tate	$357
Dbase III by Ashton Tate	$415
Cornerstone by Infocom	$279

Graphics

Energraphics	$188
Enercharts	$209
Microsoft Chart	$193
Bank Street Writer by Broderbund	$ 59
The Print Shop by Broderbund	$ 49
Generic Cad by Generic Software	$ 99

Communications

Crosstalk 16	$120
Crosstalk Mark IV	$140
Smartcom II by Hayes	$ 99

MICHIGAN RESIDENTS CALL COLLECT
517-739-7009

— NATIONAL TOLL FREE ORDER —
1-800-843-9659

Order lines open 9a.m.-6p.m Mon-Fri & 9a.m.-4p.m Sat.(EST). Call toll free number to verify prices and availability of product. Prices and availability are subject to change without notice. We ship COD (2.00 charge) to U.S. and parts of Canada. Please include 4% shipping and handling on all orders. Orders shipped UPS ground unless otherwise specified. Additional charges for special handling. APOs shipped to free if prepaid. Michigan residents add 4% tax. Due toour low prices all sales are final. Please call 517-739-7009 for technical assistance, replacement, or repair. For immediate delivery send cashiers check, money order, or direct bank transfer.

Total Performance

SABET ELECTRONICS : Systems America's Business Expects Today

2225 Nolan, Carrollton, TX 75006 (214) 446-9419
Order Desk:(214) 446-9419 Technical:(214) 644-8306

AD #8609

HARDWARE

P/N

CPU Mother boards:

A01 640K/4.77Mhz XT w/ 0-k.....$104
A01 640K 5/8Mhz XT,2-layer w/0-k.....$124
A03 640K 5/8Mhz XT,4-layer w/0-k.....$149
A04 1Meg 6/8Mhz AT w/ 0-k,Beltron Bios..$549
A05 1Meg 6/8Mhz AT w/ 1M ,Smartek Bios..$649
A06 1Meg 6/8Mhz AT w/ 1M,Atronics Bios..$649
A07 1Meg 6/8Mhz AT w/ 1M,Novas Bios.....$649
A08 1Meg 6/10Mhz AT w/ 1M,Phoenix Bios..$749
A09 1Meg 6/10Mhz AT w/ 1M,Phoenix Bios.....
Parallel & 2 Serials on-board..$799
A10 1Meg 6/12Mhz AT w/ 1M,Phoenix Bios.....
Parallel & 2 Serials on-board..$890
A11 512K 6/8Mhz XAT w/512K,CSS Labs Bios....
fits in XT case.....$549

Add-on/Add-In Expansion bds:

A12 FDC controller w/ cable,2-drive.....$29
A13 Disk I/O w/ par.,ser.,game,clock.....$87
A14 384K M/F w/ 0-k,par,ser,game,clk.....$87
A15 AT or XT I/O w/ par,ser,game,clock.....
2nd optional ser.....$67
A16 A/D & D/A Data Acquisition.....$79
A17 Dual serial w/ 2nd optional ser.....$32
A18 Parallel Printer Adapter.....$24
A19 Straight Monochrome Adapter only.....$45
A20 IBM Monochrome/Printer Adapter.....$75
A21 Hecules type Monographic/Printer.....$79
A22 RGB/RCA colorgraphic Adapter.....$55
A23 EGA 640*350 Graphic/Printer Adptr...$245
A24 Tecmar 640*400*16color Adapter.....$295
A25 Tseng-Labs 132col Monographic/Printer....
w/ clock,2 optional serials...$175
A26 2M EMS M/F Above board w/ par,ser...$259
A27 3M AT M/F 3000 bd w/ 0-k,par,ser,.....
game,2nd optional ser.....$159
A28 2M AT Memory Expansion w/ 0-k.....$145
A29 WD 1002wx2 Harddisk controller.....$92
A30 WAT1003 AT Hard/Floppy controller...$199
A31 Adaptec 2070A RRL controller.....$165
A32 576K Memory Expansion for PC's,0-k...$45
A33 JRAM-3 EMS memory w/ 0-k.....$249
A34 JRAM-3AT EMS memory w/ 0-k.....$325

Case/Power Supply:

A35 XT slide-top/flip-top case,FCC.....$49
A36 AT slide-top case,FCC.....$79
A37 AT slide-top w/ reset sw,Turbo LED...$98
A38 135W XT Power Supply,110/220 sw.....$59
A39 150W XT Power Supply,110/220 sw.....$73
A40 220W AT Power Supply,110/220 sw.....$109
A41 65 W IBM Power supply.....$55

Key Boards:

A42 Micro Switch 5151 AT/XT selectable...$88
A43 Maxi- Switch 5150 AT/XT selectable...$69

Floppy Drives:

A44 Fujitsu/Panasonic/CDC/Maple.....$89
A45 Teac.....$95
A46 1.2M High Density AT, Weltec.....$139
A47 1.2M High Density AT,Teac.....$125

Winchester Harddisks:

A48 10Meg CMI w/ controlller.....$275
A49 20Meg Seagate w/ WD1002 controller..$395
A50 30Meg Miniscribe w/ Adaptec2070A....$445
A51 AT Fast 40ms: 20Meg/33Meg.....$450/550
A52 Maxtor 1065:27ms, 65Meg.....$1295
A53 Maxtor 1085:27ms, 85Meg.....$1595
A54 Maxtor 1140:27ms,140Meg.....$2250

Chips:

A55 4164-15/41256-15/41256-12/4116....$CALL
A56 41256-100/V20-5/V20-8.....$5.50/11/15
A57 8087-3/8087-2/80287-5.....$119/169/185
A58 80287-8/8250/1488/1489.....$299/8/2/2
A59 10Mhz AT IC set:80286,288,284.....$145
A60 Xtal Oscilators:20Mhz/24Mhz.....$9/11
A61 Eproms,250ns:2764/27128/27256....$4/6/9

Monitors:

A62 Magnavox,TTL amber 12".....$89
A63 MTR,TTL amber/green 14",s/t base...$139
A64 Atlantic, TTL amber 14".....$129
A65 Thompson,RGB 14" CM36512.....$295
A66 Mitsubishi,RGB 14" XT1409.....$325
A67 NEC Mutisync,EGA 14".....$CALL

Backup Tape Drives:

A68 Irwin 110,10Meg,internal XT.....$349
A69 Irwin 125,20Meg,internal AT.....$449
A70 Memtec/Syscen 20Meg,internal AT/XT..$549
A71 Archive 60Meg,internal AT/XT.....$699

Modems:

A72 Everex,1200B internal.....$109
A73 Avatex,1200B External.....$99

SYSTEMS

SABET TURBO——$475
*Norton SI Test = 1.8
*8088-2 CPU,5/8Mhz speeds
*512K RAM, 640K Expansion
*360K DSDD HH Floppy Drive
*135W Power Supply
*5151 Micro Switch Keyboard
*MS DOS 3.1& User's Manuals

SABET TURBO-20——$1069
*Same as SABET TURBO plus
*20Meg Harddisk, controller
*Monographic/Printer Board
*TTL Amber Monitor,720*348

SABET TURBO-30——$1349
*Same as SABET TURBO plus
*30Meg Harddisk, controller
*Monographic/Printer Board
*TTL Amber Monitor,720*348

SABET AT——$1349
*Norton SI Test = 10.5
*6/10Mhz Dual Speeds
*1Meg RAM Memory
*1.2M High Density Floppy
*220W Power Supply
*5151 Micro Switch Keyboard
*MS DOS 3.1 & User's Manual

SABET AT-20——$1949
*Same as SABET AT plus
*20Meg Harddisk, controller
*Monographic/Printer Board
*TTL Amber Monitor,720*348

SABET AT-30——$1675
*Same as SABET AT plus
*Norton SI Test = 13.3
*6/12Mhz Speeds, upgraded
*Parallel & 2 Serial ports

Printers:
Cordata Laser Jet:includes..
36 Fonts in resident memory,
FormEasy typesetting progrm,
WS2000,8-page/min.....$2195
StarMicronics:
LV-1210 120/30NLQ.....$199
NX-10 120/30NLQ.....$275
SG-15 120/25NLQ.....$439
SR-10 200/50NLQ.....$550
SR-15 200/50NLQ.....$665
NB-15 300/100NLQ.....$995

SOFTWARE

EGA Paint..$69 VideoGram...$69
Ability....$58 PrintMaster.$33
The Twin...$58 PrintShop...$13
VP Planer..$49 Racter.....$27
Nutshell...$58 IntraCourse.$39
Fastback...$88 Brief.....$129
SmartNotes.$48 CopyIIPC....$19
SuperKey...$39 PCTools.....$19
DoubleDos..$28 Reflex.....$42
Think Tank.$98 Sideway3.1..$33
Xtree.....$27 ..others..$CALL
InterludeII.....$33
Disk Optimizer.....$28
Micro Soft Windows.....$58
Norton Commander.....$44
Norton Utilities 3.2 .....$49
Sikekick/Unprotected....$33/47
Dollars&Sense-Forcast.....$98
Home Accountant Plus.....$79
Managing Your Money.....$98
MS Macro Assembler.....$88
Turbo Pascal 3.0 .....$39
Turbo Prolog.....$58
Falcon MS DOS 3.1.....$45
Cross Talk XVI 3.6.....$95
Flight Simulator.....$29
Newsroom/Clip Art.....$34/21
Typing Tutor III.....$29
Word Star 2000.....$295

PUBLIC DOMAIN PRGMS: EACH DISK...$3.50
(over 220 titles):
Tool Box 1/2/3,
Games 1/2/3/4/5,
PC-File/Finance/Checkbook
PC-Modem/Spreedsheet/Musician
PC-Basic/Dos help/Graphic1/2
Word Proces. for kids
C lang. (6 disks)
Turbo Pascal (6 disks)
...many more see.....
350 Paperback Directory Disk

CLONES TECHNICAL & LEARNING TAPES:
(VHS or BETA tapes for techicians,clone makers)
TAPE 1:Discusses the problem in dealing w/ Turbo systems. Covers incompatibilities,timing & component level trouble shooting.....$59
TAPE 2:Illustrates proper final config. of the Clone sys. Promts,defauts,Bat-files..$49

ACCESSORIES & SUPPLIES:

P/N

Cables:

B01 IBM Printer,6',DB25 male/CEN36 male..$7
B02 Serial RS-232,6',DB25,male/female....$7
B03 AT serial,DB9 female/DB25male.....$5
B04 RGB/TTL monitor,6',DB9,male/male.....$8
B05 RGB/TTL monitor extension,6',m/f.....$8
B06 Keyboard extension,6',coiled.....$5
B07 RCA composite video,6'.....$4
B08 Special 8-pin male/DB9 male,6',.....$9
B09 IBM ac power cord,6',detachable.....$3
B10 Dual 5.25 floppy controller cable....$6
B11 AT harddisk cable set,(2).....$5
B12 Y-Power cable for disk drives.....$3

ACCESSORIES:

B13 Surge Protector,6 outlet,MOV&LC...$9.75
B14 Bulk disketts,generic,10 each.....$4.95
B15 Mouse systems PC Mouse.....$98
B16 M1 speech Synthysizer,.....$75
B17 A/B RS232 serial Switch box.....$32
B19 A/B Centronic Parallel Switch box...$32
B20 A/B/C Serial switch box.....$39
B21 120-diskett holder/storage.....$8
B22 Keyboard Drawer,fit-all,wide.....$54
B23 Gender changers:male/male,fem/fem....$5
B24 DB25 solder pot type:male/female..$1.25
B25 DB-25/DB-9 plastic hood.....$.75
B26 3-volt lithium battery/holder.. $1.50/1
B27 AT drive mounting rail set (2).....$3

Computer paper: laser cut
B28 1000 sheets,9.5*11,20lbs,white....$9.95
B29 2500 sheets,9.5*11,20lbs,white...$19.95
B30 3500 sheets,14.5*11,15lbs,white..$29.95

Computer labels:
B31 1 ACROSS,5000 Labels.....$13.95
B32 1 ACROSS,3000 Labels.....$ 9.95
B33 1 ACROSS,2000 Labels.....$ 8.95
B34 1 ACROSS,1000 Labels.....$ 5.95

HAVE A NICE DAY !

Terms:UPS COD;MASTER/VISA:no surge charge;PREPAYMENT:2% discount;
Warranty:1 yr parts,90 day labor. Prices suject to change w/o notice.
We will beat or match any prices in this issue based on items carried.

"It's the best IBM® compatible deal because everything is included."

Alan Weinstein, President
Fashion Business Systems
Livingston, New Jersey

"Complete. No extra charges. Ready to run."

Matt Thran, US Navy Reserve
Used in Hospital Setting

predicts that in 1986 IBM clones and compatibles will outsell the real thing 1.8 million to 1.6 million. In 1985 it was the other way around, with IBM selling nearly 1.5 million personal computers.
Wall Street Journal, 6/16/86

The ΣQUAL...it has no equal!

by United Microcomputer Applications Inc.

We're able to bring you this incredible deal by cutting out layers of middlemen, buying in volume, having very low overhead and our own designer on staff. Here's what delighted users are saying:

"All my software runs perfectly on the system as well as the cards I've plugged into the option slots."
John Parker, ITT

"I was extremely impressed with their service...it was actually faster than if I had brought it in locally."
Frank Ashley, AT&T Bell Labs

"I was pleasantly surprised to see the system comes with a socket and configuration for the 8087 math coprocessor."
Charles J. Peterman, CEO
Yankee Products & Resources, Valencia, California

Save up to 60% off similarly configured IBM systems

30 DAY TRIAL!
Return in 30 days if not delighted, less 10% restocking fee. Must be in original boxes in perfect condition. Refund made upon serial number verification.

Save up to 29% off similarly configured compatibles

EQUAL I	EQUAL II
Similar to IBM PC with 640K & 8087 support	Similar to IBM XT with 640K & 8087 support
• 640K RAM included	• 640K RAM included
• two 360K drives	• one 360K floppy drive
• green or amber monitor	• one 20 meg hard disk
• MS-DOS 3.2 & GW BASIC	• green or amber monitor
	• MS-DOS 3.2 & GW BASIC
• XT type slide case (FCC Class A&B approved) Room for 2 floppy and 2 hard drives!	• XT type slide case (FCC Class A&B approved) Room for 2 floppy and 2 hard drives!
• maximum 150W power supply with fan	• maximum 150W power supply with fan
• 4.77 MHz clock speed (add 8 MHz, $69)	• 4.77 and 8 MHz clock speed
• 8088 microprocessor	• 8088 microprocessor
• XT compatible BIOS	• XT compatible BIOS
• 8087 support option included	• 8087 support option included
• 5151 extended style keyboard; 98 keys.	• 5151 extended style keyboard; 98 keys.
• cables, manual	• cables, manual
• 2 parallel, 1 serial ports • graphic adaptor	• 2 parallel, 1 serial ports • graphic adaptor
• clock/calendar/battery backup	• clock/calendar/battery backup • game port
• game port • speaker	• fully tested & burned in • speaker
• fully tested & burned in	• 1 year parts & labor warranty
• 1 year parts & labor warranty	• 8 expansion slots (not five!)
• 8 expansion slots (not five!)	
$1395 plus $30 shipping each	$1795 plus $30 shipping each

COLOR MONITOR OPTION ADD $249

40MB TAPE BACKUP INSTALLED AND TESTED $569

ABLE INTEGRATED SOFTWARE PACKAGE
Included! Popular software package does word processing, spreadsheet and data base management. Multiple Windows Colorful Graphics no extra charge! Included for you at $85 value!

VOLUME PRICING AVAILABLE • DEALER INQUIRIES INVITED
ALL MAJOR COMPONENTS TESTED & RE-TESTED BEFORE SYSTEM IS SHIPPED

FULL 1 YR WARRANTY! Covers parts and labor for one full year. Factory pays shipping in both directions.
Repairs or exchange made within 48 hours of receipt!
2nd year service contract, only $49!

ORDER USING ALL MAJOR CREDIT CARDS!

NO SURCHARGE!

2-3 week UPS delivery. Checks clear in 2 weeks. No COD's or invoicing.

ORDER 2 OR MORE AND DEDUCT ANOTHER 5%!

TECHNICAL HOTLINE	ORDER HOTLINE	ORDER-BY-MAIL
TECHNICAL QUESTIONS ONLY Call (Mon-Fri, 10-5 EST) (201) 539-9293	WHEN ORDERING CALL COLLECT! Mon-Fri, 8-8, EST (201) Ask for oper. #27 445-7196	Mail certified check or money order (no delay) or personal check (2 weeks to clear) NJ buyers include 6% sales tax. Targeted Marketing Inc. Box 5125-27 Ridgewood NJ 07451

MEMBER DIRECT MARKETING ASSOCIATION

FULLY ASSEMBLED, BURNED-IN AND TESTED IN THE U.S.A.!

Free!

FREE bonuses worth $74 with each system purchased . . . our way of saying "Thank you for your order."

3M Head Cleaning Kit $14 Value
50 Diskette FLIP 'N FILE $20 Value with dividers
Box of 10 DSDD Diskettes $20 Value
6 Outlet Surge/Spike Protector $20 Value

Reg. TM's: IBM (Int'l Bus Machines); MS-DOS (Microsoft Corp.); ABLE One (Able Int'l.); EQUAL I,II (United Microcomputer Applications Inc.). Not responsible for typographical errors. Prices subject to change and availability. No unauthorized returns accepted. Local buyers may pick up systems. Priority shipping available at extra cost. No sales tax on orders shipped outside N.J. All equipment carries manufacturer's warranty.

Synergy
COMPUTER SERVICE COMPANY

formerly WOLFF ELECTRONICS

For orders
214/423-8097

901 E. Plano Pkwy #117
Plano, TX 75074

CASH PRICE ONLY
- Prices DO NOT include shipping
- VISA & MasterCard add 3%
- COD's add $1.90
- Checks accepted, allow 10 days to clear
- Dallas MTA add 6 1/8%
- Other Texas residents add 5 1/8%
- Prices subject to change without notice
- We reserve the right to limit quantities

15% Restocking on Returned Orders

MasterCard VISA AMERICAN EXPRESS C.O.D.

PERFECT HOME PC SYSTEM $979
- high-resolution color monitor (switches to amber or green)
- color graphics card
- slide-out case
- 5150 style keyboard
- 256K memory
- MS-DOS 3.1 w/manual
- 135W hard disk ready power supply
- one DSDD 5¼ floppy drive

NEW!

PERFECT AS IS... READY TO GROW WITH YOUR NEEDS!

****

256K BARE BONES XT SYSTEM $599
- one DSDD floppy drive
- 5150 style keyboard
- slide-out pc case
- MS-DOS 3.1 w/manual
- 135W hard disk ready power supply

ALSO AVAILABLE IN TURBO XT.....$699

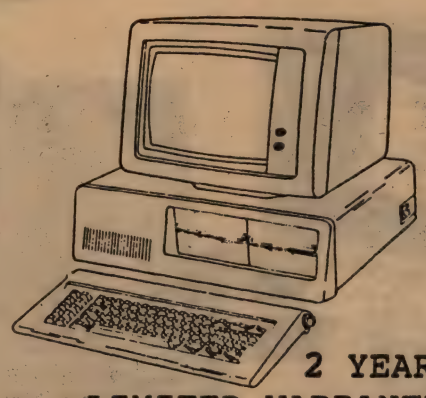
STANDARD XT SYSTEM $999
- multifunction w/serial, parallel & game ports, clock calendar and floppy controller
- two DSDD 5¼ floppy drives
- colorgraphics or monographics card
- TTL or composite, amber or green monitor
- slide-out pc case
- 5150 style keyboard
- 135W hard disk ready power supply
- 8 card slots
- 640K RAM
- fully tested
- MS-DOS 3.1 w/manual
- optional math co-processor (see listing)

STANDARD XT SYTEM WITH 20MEG HARD DISK $1419

STANDARD TURBO XT SYSTEM $1099
- multifunction w/serial, parallel & game ports, clock calendar and floppy controller
- two DSDD 5¼ floppy drives
- colorgraphics or monographics card
- TTL or composite, amber or green monitor
- 135W hard disk ready power supply
- software selectable clock speed: 4.77 or 7.4MHz
- slide-out pc case
- 5150 style keyboard
- 8 card slots
- 640K RAM
- fully tested
- MS-DOS 3.1 w/manual
- optional math co-processor (see listing)

STANDARD TURBO XT WITH 20MEG HARD DISK $1519

The ARC personal computers to take you further, faster...



2 YEAR LIMITED WARRANTY

ALL systems MUST pass rigorous testing and at least 80 hours of burn-in before they can be shipped. One more thing we are doing to insure your satisfaction.

FCC APPROVED

ASK ABOUT OUR CLONES

THE RETURN OF THE PORTABLES. ALL CARRY A ONE YEAR WARRANTY!

PORTABLE XT SYSTEM $1059
- 256K RAM
- 5150 style keyboard
- amber TTL
- two floppy drives

PORTABLE TURBO XT SYSTEM $1119
- 640K RAM
- 5150 style keyboard
- amber TTL
- two floppy drives

PORTABLE AT SYSTEM $1999
- 512K RAM
- 5150 style keyboard
- amber TTL
- 6MHz clock speed
- 1.2M floppy drive

PORTABLE TURBO AT SYSTEM $2099
- 512K RAM
- 5150 style keyboard
- amber TTL
- 10MHz clock speed
- 1.2M floppy drive

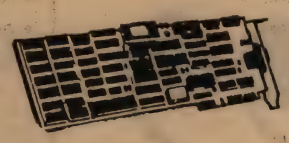
BARE BONES 286 SYSTEM $1399
- 640K upgradeable to 1 Meg
- AT style keyboard
- floppy/hard disk controller
- 192W power supply
- 1.2M floppy drive
- MS-DOS 3.1 w/manual

STANDARD 286 TURBO SYSTEM $1799
- colorgraphics or monographics card
- TTL or composite, amber or green monitor
- 640K RAM expandable to 1 Meg
- standard AT footprint motherboard
- floppy/hard drive controller
- 8 MHz speed
- 200W power supply
- parallel/serial card
- MS-DOS 3.1 w/manual
- on-board clock calendar
- AT look-alike case
- 1.2Meg floppy drive
- optional 360K drive
- optional 80287 math co-processor ($259)

STANDARD AT TURBO WITH 20MEG HARD DRIVE $2119

EXPANSION CARDS

FCC APPROVED



Generic

game card.....$ 19
2 drive floppy controller.....$ 29
4 drive floppy controller.....$ 39
TTL monographic.....$ 79
hard disk controller.....$ 79
serial card.....$ 29
parallel card.....$ 19
color graphics card.....$ 59
Eprom programmer card.....$ 79
384K multifunction card w/ØK.....$ 99
serial/parallel/clock (XT).....$ 89
serial/parallel/floppy controller..$ 99
AT floppy controller.....$ 79
serial(2nd optional)/parallel (AT).$ 89
2Meg above multifunction w/ØK.....$249

Everex

Edge graphics.....$279
Magic II multifunction w/ØK.....$149
Evergraphics monographic (Hercules)$129
Evergraphics EGA piggyback.....$389
Magic 16 (AT) 2M multifunction/ØK..$209
3M RAM (AT) w/ØK.....$169
EGA card.....$249

Name Brands

Zucker colorgraphics.....$ 79
WD AT hard disk controller.....$259
WD AT floppy/hard disk controller..$269
WD hard disk controller.....$109
Sigma EGA card.....$369
Sigma color 400H/31KMhz scan.....$469
Sigma color 400L/25KMHz scan.....$469
CopyIIPC card.....$ 89
Taxan 552 color card.....$149
Taxan 555 color card.....$189
Paradise mono/color card.....$119
Tecmar graphics card.....$509
286 Express card.....$559
ALR 1.2M floppy controller & multifunction (ØK) for XT.....$199
(data disk software available)

TAPE BACK UP

Everex

internal 20M w/controller.....$ 649
external 20M w/controller.....$ 749
internal 60M w/Kennedy drive & controller....$ 849
internal 60M w/Wangtec drive & quick 36.....$ 859
external 60M w/Wangtec drive & quick 36.....$ 979
external 60M w/Wangtec & quick 02 host adpt..$1049
external 60M w/Wangtec & dual floppy & Tape..$1119
external stream 60-8 archive tape unit/cont..$ 789
internal stream 60 archive tape unit/cont....$ 719
quick 02 host adaptor.....$ 109
quick 36 tape controller.....$ 239
dual floppy & tape controller..(XT/AT).....$ 279

Sysgen

external 20M w/controller.....$ 739
internal 20M w/controller.....$ 659
internal 60M w/controller.....$1149
external 60M w/controller.....$1229

(all units come w/software & documentation)

Irwin

internal or external..10,20,45,60.....$CALL

HARD DISK

Extensive line of both hard disk drives and hard disk cartridges featuring:

Seagate	Microscience
Rodine	Micropolis
Syquest	Emerald

Because the market fluctuates daily, we ask that you call for the best pricing.

THIS MONTHS SPECIALS

INTERNAL MODEM...100% Hayes compatible...½ card w/software & cables $99

EVEREX 300/1200 MODEM...100% Hayes compatible w/software & cables $129

SUPER-FAST HARD DISK CONTROLLER...interleave of 1:1 great for all popular drive models! $99

ZUCKER 576K MEMORY CARD w/ØK $39

IBM PC™, AT™, PC/XT™ are trademarks and IBM® is a registered trademark of International Business Machines Corporation.

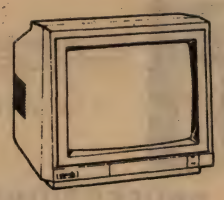
Synergy
COMPUTER SERVICE COMPANY

Where Service Is Our
Most Important Product

Customer Support
214/422-0519
214/987-9936

DEALERS, VARs, QUANTITY BUYERS PROGRAMS

MONITORS



PRINCETON

Max12E 12" amber TTL (EGA).....$189
HX9 9" RGB 640x200.....$489
HX9E 9" RGB 640x350.....$559
HX12 12" RGB 640x200.....$499
HX12E 12" RGB 640x350.....$589
SR12 12" RGB 640x400.....$589
SR12P 12" RGB/analog input/4096 clr
professional graphic adaptor....$749

TAXAN

Mdl 115 12" green composite.....$129
Mdl 116 12" amber composite.....$139
Mdl 121 12" green TTL.....$149
Mdl 122 12" amber TTL.....$159
Mdl 620 RGB 640x200.....$429
Mdl 630 RGB 640x400.....$479
Mdl 640 RGB 720x400.....$559
(RGB models switch amber, green, B/W)

THOMSON

12" amber or green composite.....$129
12" amber or green TTL.....$149
14" RGB 560x240.....$299
12" RGB 560x240.....$319
14" RGB 640x240.....$359
12" RGB 690x240.....$429
(RGB models switch green/amber)

MAGNAVOX

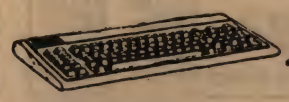
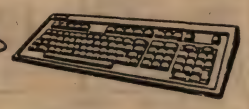
12" amber or green composite.....$ 89
12" amber or green TTL.....$ 99

NEC

Multisync (EGA, CGA, TTL).....$649

FLOPPY DISK DRIVE

Mitsubishi 1.2Meg.....$149
Mitsubishi 360K.....$109
TEAC 1.2Meg.....$139
TEAC 360K.....$ 99
Maple 1.2Meg.....$109
Maple 360K.....$ 79

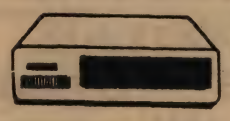



KEYBOARDS

5150 style.....$ 59
5151 style.....$ 79
AT/XT.....$ 69

Keytronics

5150.....$129
5151.....$199
5151 AT.....$209
3270 AT/XT.....$289



CASES

XT slide out/flip up.....$ 39
AT style.....$ 89

XT external drive case/cables & PS.$169
AT external drive case/cables & PS.$199

POWER SUPPLIES

135W.....$ 69
150W.....$ 79
200W..XT.....$119
200W..AT.....$119
(all power supplies-side switch)

PRINTERS

CANON PRINTERS

A New Dimension in Printing Efficiency

Mdl A40 (140 cps/80 col).....$259.00
Mdl A50 (180 cps/80 col).....$369.00
Mdl A55 (180 cps/132 col).....$509.00
Mdl BJ80 (220 cps/bubble jet).....$449.00
Mdl A60 (200 cps draft/110 cps NLQ/
34 cps NLQ+/18 pin/80 col).....$529.00
A60 sheet feeder.....$139.00
A60 tractor feed.....$139.00
A60 font cartridges.....$ 59.00
Canon replacement ribbons.....$ 7.90
Canon ink cartridges.....$ 14.00

lasers

LBP8A1.....$2229.00
LBP8A2...dot addressable graphic..$3299.00

AMT OFFICE PRINTER $1699

IMAGINE...one printer giving you everything...daisywheel, dot matrix, plotter and all in color! Well this is it!!!!!

- 3 print modes: letter, memo, draft
- 5 pitches plus proportional spacing
- up to 7 resident fonts (Italics, OCR, bar codes, scientific...or download custom fonts into expandable memory
- dot-addressable graphics to 240 x 480
- AMT & Diablo 630 serial protocol
- ASCII Centronics compatible parallel interface available ($100)

COMPLETE LINE OF ACCESSORIES AVAILABLE.

PROCESSOR REPLACEMENTS NEC

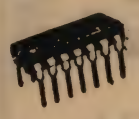
8086 5MHz.....$19.00
(V30) 8MHz.....$24.00
8088 5MHz.....$12.00
(V20) 8MHz.....$15.00

MATH CO-PROCESSORS

8087 5MHz.....$139.00
8MHz.....$159.00
80287 6MHz.....$199.00
8MHz.....$259.00

MISCELLANEOUS

joystick.....$ 21.95
swivel monitor stand.....$ 14.00
mini vacuum.....$ 21.00
AC surge suppressor.....$ 14.00
Logimouse.....$ 79.00
Mouse System w/PC Paint.....$159.00
AB switch box (2-way parallel).....$ 29.00
AB switch box (2-way serial).....$ 29.00
AB switch box (4-way parallel).....$ 49.00
gender changer (f-f or m-m).....$ 5.59
diskette storage boxes....10 unit..$ 1.50
....35 unit..$ 6.50
....75 unit..$ 8.50
...100 unit..$ 10.50
diskettes.....5¼ (box/10).....$ 9.50
.....5¼ (bulk).....$ .85
.....AT (box/10).....$ 30.00
Y-connectors.....$ 4.00
parallel printer cable.....$ 12.00
modem cable.....$ 13.00
keyboard extension cable.....$ 14.00
RGB extension cable.....$ 14.00



BOOKS

by Plano's own
Workware Publishing

WordStar Customizing.....$17.95
Managing Your Megabytes.....$16.95
Communications Handbook.....$10.95
The Complete pfs: Book.....$12.95
Illustrated Wordstar.....$17.95
Illustrated AutoCAD.....$17.95
Illustrated Turbo Pascal.....$12.95
Illustrated dBase II.....$13.95
Illustrated dBase III.....$17.95
Illustrated Lotus 1-2-3.....$14.95
Illustrated Symphony.....$16.95
Illustrated C Programming.....$17.95
Illustrated Ms/PC-DOS.....$12.95
Illustrated Multimate.....$16.95

SOFTWARE ★★★★

SideKick.....$ 24.95
CopyIIPC.....$ 24.95
Desq View.....$ 38.95
DATA DISK (formatting software)....$ 39.00
MS-DOS 3.1/manuals.....$ 49.00
MS-DOS 3.2/manuals.....$ 79.00
DAC Easy Accounting.....$ 59.95
DAC Easy Payroll.....$ 44.95
DAC EAsy Word.....$ 44.95
VP Planner.....$ 71.95
ProDesign.....$229.00

EMPLOYEES' CORNER

WE ALL WANT TO SAY THANK YOU;
WE APPRECIATE YOUR BUSINESS!!

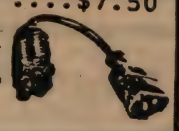
EMPLOYEE TIPS OF THE MONTH...

Steve: "Don't mix DOS levels."

MONITOR ADAPTOR POWER CABLE $7.50

NOW PLUG ANY MONITOR INTO THE PC POWER SUPPLY

End the irritation of having to turn your monitor off separately from your computer. Simply plug this adaptor into the monitor socket and plug the monitor into the adaptor, then one switch will handle monitor and computer.



NO MANUFACTURE LABEL OR PRETTY BOX

DISKETTES

"Quality Bulk"

LIFETIME WARRANTY

Factory sealed in packs of TEN with white Tyvek Sleeves, Write Protect Tabs and ID Labels.

Single Side Double Density **.54 ea.** (MIN. 50)

Double Side Double Density **.63 ea.**

Manufactured 100% by one of the BIG BOYS

Old Reliable the Diskette Connection™
*Delaware 1·800·451·1849 P.O. Box 10247 Wilmington, DE 19850
*Oklahoma 1·800 654·4058 P.O. Box 1674 Bethany, OK 73008
*Nevada 1·800·621·6221 P.O. Box 1213 Boulder City, NV 89005

TERMS: (Order Total, 30.00 Min.) VISA or MasterCard accepted C.O.D. orders add 2.00 for special handling. SHIPPING: 3½ & 5¼ Diskettes; Add 3.00 for every 100 Diskettes or any fraction thereof. 8" Diskettes; Add 4.00 for every 100 Diskettes or any fraction thereof. We ship UPS; orders requiring other delivery methods add shipping, plus 2% of total order.

AMERICAN MADE

3M diskettes — LIFETIME WARRANTY

3M

Call For Quantity Discounts

5¼" Disks		Data Cartridges		3½" Disks	
S·Side D·Den	7.95	DC 100A	12.95	S·Side	15.75
D·Side D·Den	11.25	DC 1000	12.95	D·Side	22.10
S·Side 96tpi	15.75	DC 300A	16.60	8" Disks	
D·Side 96tpi	19.75	DC 300 XL	19.55	S·Side S·Den.	15.40
HIGH DEN.	22.90	DC300XLP	19.85	S·Side D·Den.	18.95
		DC 600A	22.00	D·Side D·Den.	20.95

HEAD CLEANERS 12.75 EA. 30 Cleanings

Old Reliable the Diskette Connection™
*Delaware 1·800·451·1849 P.O. Box 10247 Wilmington, DE 19850
*Oklahoma 1·800 654·4058 P.O. Box 1674 Bethany, OK 73008
*Nevada 1·800·621·6221 P.O. Box 1213 Boulder City, NV 89005

3M Authorized Distributor Information Processing Products

Scotch™

Scotch™ VIDEOCASSETTES T-120 or L-750 **4.89**

EG+ HIGH GRADE VIDEOCASSETTES T-120 or L-750 **5.89**

PROFESSIONAL T120 PRO L750 PRO (COLOR PLUS) **7.95**

Old Reliable the Diskette Connection™
*Delaware 1·800·451·1849 P.O. Box 10247 Wilmington, DE 19850
*Oklahoma 1·800 654·4058 P.O. Box 1674 Bethany, OK 73008
*Nevada 1·800·621·6221 P.O. Box 1213 Boulder City, NV 89005

LIFETIME WARRANTY

Verbatim®

5 & 10 Box Quantity Discounts

5¼" Disks		Digital Cassettes		3½" Disks	
S·Side D·Den.	7.95	T300	4.05	S·Side	15.65
D·Side D·Den.	10.95	R300	3.85	D·Side	21.95
S·Side 96tpi	15.75	T450	5.55	8" Disks	
D·Side 96tpi	19.75	DC30	6.60	S·Side S·Den.	15.40
HIGH DEN.	22.80	MI 50	4.90	S·Side D·Den.	17.95
		HD 10	7.95	D·Side D·Den.	20.95
		HEAD CLEANERS			
		5¼" Kits	4.75		
		5¼" Refills	7.00		
		8" Kits	5.05		
		8" Refills	8.00		

Old Reliable the Diskette Connection™
*Delaware 1·800·451·1849 P.O. Box 10247 Wilmington, DE 19850
*Oklahoma 1·800 654·4058 P.O. Box 1674 Bethany, OK 73008
*Nevada 1·800·621·6221 P.O. Box 1213 Boulder City, NV 89005

---

dysan — LIFETIME WARRANTY

Dysan® CORPORATION

QUANTITY DISCOUNTS

5¼"		8"		Dysan™ Interrogator
D·Side D·Den.	17.95	S·Side S·Den.	17.95	97.95 ea.
S·Side 96tpi	20.95	S·Side D·Den.	19.95	PC DRIVE ANALYZER
RX 50 Format	21.95	D·Side D·Den.	22.95	
D·Side 96tpi	25.95			
HIGH DEN.	29.95			
3½" Available				

Anti-Glare Moniter Screen
IBM PC 14.95
IBM PC (Color Mon.) 17.50

Old Reliable the Diskette Connection™
*Delaware 1·800·451·1849 P.O. Box 10247 Wilmington, DE 19850
*Oklahoma 1·800 654·4058 P.O. Box 1674 Bethany, OK 73008
*Nevada 1·800·621·6221 P.O. Box 1213 Boulder City, NV 89005

LABELS

PRESSURE SENSITIVE FORM FED STANDARD SIZES

3½" x 15/16" Single Row

1000-4000		5000+
3.49 PER 1000	FREE SHIPPING with Disks	2.49 PER 1000

Old Reliable the Diskette Connection™
Delaware 1·800·451·1849 P.O. Box 10247 Wilmington, DE 19850
Oklahoma 1·800 654·4058 P.O. Box 1674 Bethany, OK 73008
Nevada 1·800·621·6221 P.O. Box 1213 Boulder City, NV 89005

---

maxell®

FLOPPY DISKS

5 & 10 box Quantity Discounts

5¼" DISKS		3½" DISKS	
S·Side D·Den.	7.95	S·Side	14.75
D·Side D·Den.	11.25	D·Side	21.95
S·Side 96tpi	16.95	8" DISKS	
D·Side 96tpi	19.75	S·Side D·Den.	19.95
HIGH DEN.	22.90	D·Side D·Den.	21.95

LIFETIME WARRANTY

Old Reliable the Diskette Connection™
*Delaware 1·800·451·1849 P.O. Box 10247 Wilmington, DE 19850
*Oklahoma 1·800 654·4058 P.O. Box 1674 Bethany, OK 73008
*Nevada 1·800·621·6221 P.O. Box 1213 Boulder City, NV 89005

SONY®

Quantity Discounts Availiable

VIDEO CASSETTES

STANDARD GRADE	ULTRA-HIGH GRADE
T120 L750 4.69	T120-UHG L750-UHG 6.49

3½" SINGLE	3½" DOUBLE	5½" High Density
14.75	21.95	22.95

LIFETIME WARRANTY

Old Reliable the Diskette Connection™
*Delaware 1·800·451·1849 P.O. Box 10247 Wilmington, DE 19850
*Oklahoma 1·800 654·4058 P.O. Box 1674 Bethany, OK 73008
*Nevada 1·800·621·6221 P.O. Box 1213 Boulder City, NV 89005

XIDEX

S-Side D-Density	D-Side D-Density
5.95 PER BOX	6.95 PER BOX

(MINIMUM FIVE BOXES)

Old Reliable the Diskette Connection™
*Delaware 1·800·451·1849 P.O. Box 10247 Wilmington, DE 19850
*Oklahoma 1·800 654·4058 P.O. Box 1674 Bethany, OK 73008
*Nevada 1·800·621·6221 P.O. Box 1213 Boulder City, NV 89005

TERMS: (Order Total, 30.00 min.) VISA or MasterCard accepted C.O.D. orders add 2.00 for special handling. SHIPPING: 3½ & 5¼ Diskettes; Add 3.00 for every 100 Diskettes or any fraction thereof. 8" Diskettes; Add 4.00 for every 100 Diskettes or any fraction thereof. We ship UPS; orders requiring other delivery methods add shipping, plus 2% of total order.

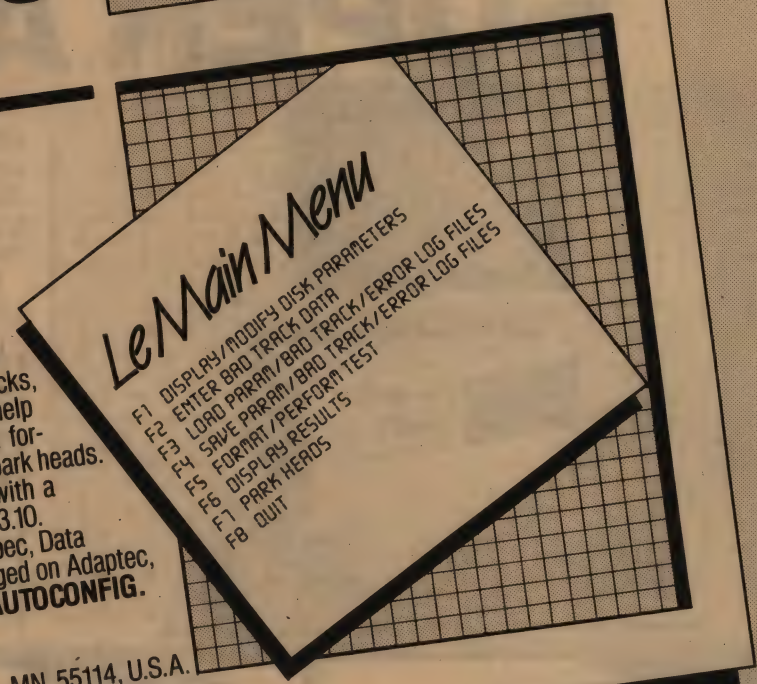
QUALITY PRODUCTS & TECH SUPPORT

THE PROTO ADVANTAGE

New Products

HDtest

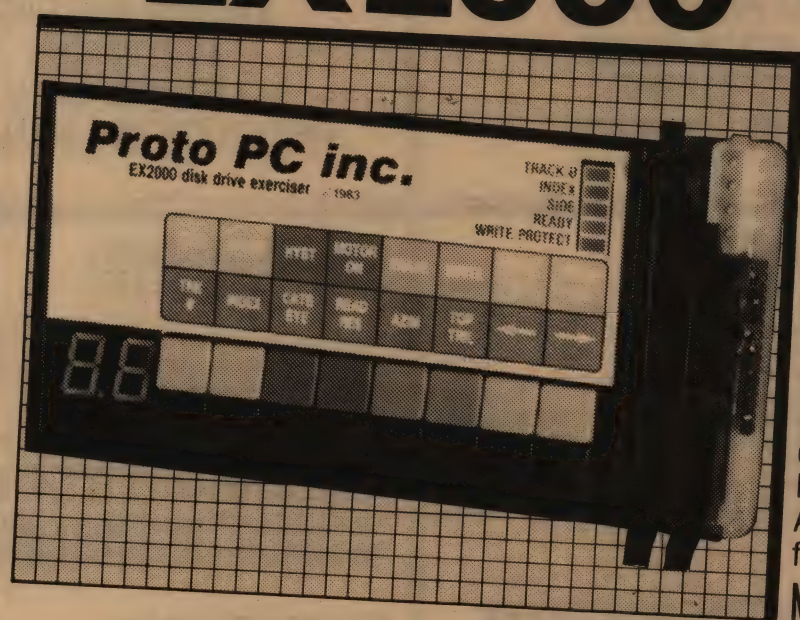
HDTEST is a menu-driven software utility that does low level "physical" formatting in addition to identifying and tracking defective areas on hard disk drives. HDTEST allows the user to *load* and *save*: drive parameters, test parameters, known bad tracks, and detected bad tracks. Other unique features include: on-line help windows for every screen; non-destructive testing; and repeat formatting and testing. A special added feature is a program to park heads. HDTEST will run on the IBM PC, XT, AT, and true compatibles with a monochrome or color card, under PCDOS versions 2.0, 2.10, or 3.10. Supported disk controllers include Western Digital, OMTI, Xebec, Data Technology (DTC), and Adaptec (drive tables can not be changed on Adaptec, but all other features work as specified). **Now works with AUTOCONFIG.**



Price: $99 available from stock. Phone 612-644-4660.
Order from Proto PC, Inc., 2424 Territorial Rd., St. Paul, MN 55114, U.S.A.
Telex # 910-380-7623.

EX2000

NEW 3½ INCH CAPABILITY



Here's the ultimate ten minute exercise for floppy drives. The EX2000 is used with an alignment disk and oscilloscope to align and repair any floppy with a standard interface. It was designed by service people to be fast and easy to use, with features like variable step rate, single keypress to any alignment track, hysteresis and speed tests, and a price that fits your budget. Options include cable sets and alignment disks for 5" or 8" drives, all backed by Proto's commitment to customer service. Available from stock, only $299. Get your floppies in shape, order an EX2000 today!

NEW 3½ INCH CAPABILITY

Proto PC inc.
2424 Territorial Road, St. Paul, MN 55114

612-644-4660
Business Line 612-644-2383

Telex 910-380-7623
HOURS: 8 AM–6 PM/CST

QUALITY PRODUCTS & TECH SUPPORT

THE PROTO ADVANTAGE

SUPER AT $1488 w/1.2mb Drive

Our basic package includes our top quality motherboard (with 640K installed, expandable to 1024K), case, power supply, Western Digital's WA2 controller for hard and floppy drives, and a 5170 type keyboard. Then add your choice of options! We offer either 1.2MB or 360K floppies, many models and brands of high capacity hard drives, and a wide variety of monitors and video cards to meet your needs.

Expect the best. The Proto AT Compatible is designed in the USA and backed by a full one year Proto warranty. Order yours today!

- 4 Drive Openings, Instead of Only 2
- 230 Watt Supply, Instead of 192
- 12 Slots, Not Just 8
- Fast 8 or 6 MHZ, Software Select

$1378 FOR BASE SYSTEM **$1465 WITH 360K FLOPPY**
$1488 WITH 1.2MB FLOPPY

NEW SPECIAL

HARD DISK • $89 CONTROLLERS FOR XT

- THE FASTEST! OMTI 5510
- UP TO 1:1 INTERLEAVE, FULL TRACK READ
- LOW POWER, VLSI 1/2 CARD
- BUY FROM PROTO PC, THE HARD DISK EXPERTS!

NEW SPECIAL

30MB FAST • $589! AT HARD DISK

- FAST 39MS SEAGATE ST4038
- VOICE COIL, AUTO-PARK
- TESTED & FORMATTED
- 40MB, ST4051, ONLY $719

NEW SPECIAL

MONITOR $1799 19" SUPER-RES

- MITSUBISHI, WORLD'S FINEST
- 1024 x 768, ANALOG
- IDEAL FOR CAD/CAM/CAE
- BEST WITH ARTIST I CARD, ORDER AS A PAIR!

SLIM HARD DRIVES

For IBM PC/XT and true compatibles. Ideal for Compaq and other portables, these half height internal systems are low-power, reliable performers. The Rodime is a shock mounted 3½" type. The Seagate features a 65ms avg access speed. Full height panel for Rodime is $13, for Seagate $3.

ST213 10mb system	$369
RO252 10 mb system	SPECIAL $389
ST225 20mb system	SPECIAL $379

FAST HARD DRIVES

For IBM XT/AT and true compatibles. These are top quality, full height, 55ms drives with Rodime reliability.

RO202E 20mb AT system	$425
RO203E 30mb AT system	$539
RO204E 40mb AT system	$689

Includes AT rails and cable. For XT system w/controller and cables, add $100.

ALL HARD DRIVES ARE THOROUGHLY TESTED AND PRE-FORMATTED!

FASTER HARD DRIVES

You can break the 32mb DOS barrier with our $99 Disk Manager Software and these high capacity drives. The Seagate ST4000 models are 39ms avg. access; the Vertex V100 series is an even faster 30ms! These full height drives feature voice-coil and auto-park technology, and are ideal for high performance applications.

ST 4026 20mb AT system	$ 529
ST 4038 30mb AT system	SPECIAL $ 589
ST 4051 40mb AT system	SPECIAL $ 719
V170 60mb AT system	$1429
V185 62mb AT system	$1449

Includes AT rails and cable. For XT system w/controller and cables, add $100. All drives tested and pre-formatted.

ASK ABOUT OUR NEW EXTENDED WARRANTY PROGRAM!

HARD DISK CONTROLLERS

WD HARD DISK CONTROLLER FOR PC/XT $89

The Western Digital WX2 card is fast, low power, and reliable. Included is the auto-configure BIOS ROM that allows keyboard entry of drive type and parameters, and supports drive partitioning. Recommended for use with PC DOS 2.1 or 3.1

OMTI HARD DISK CONTROLLER FOR PC/XT $89

As above, but smaller and faster. Up to 1:1 interleave! OMTI 5510

AT TYPE HARD AND FLOPPY CONTROLLERS

WA2 - HARD AND FLOPPY, IMPROVED VERSION OF IBM CARD $179
WAH - HARD DISK ONLY, PERFECT FOR DESKPRO™ AND SPERRY IT™ . $159

CALL NOW FOR VOLUME PRICING!

Proto PC inc.
2424 Territorial Road, St. Paul, MN 55114

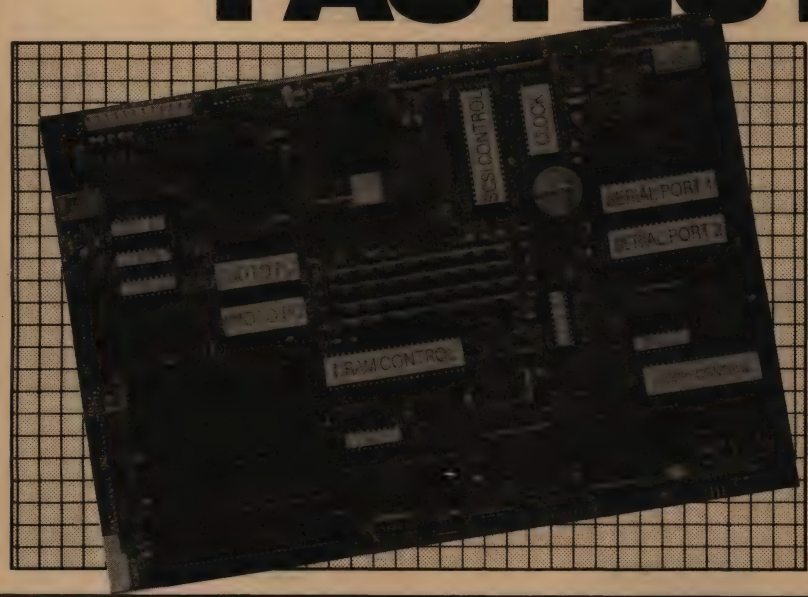
612-644-4660
Business Line 612-644-2383

Telex 910-380-7623
HOURS: 8 AM–6 PM/CST

QUALITY PRODUCTS & TECH SUPPORT

THE PROTO ADVANTAGE

FASTEST XT $799 BASE SYSTEM



Our basic system includes the X16 motherboard with 1024K, case, power supply, keyboard, and many on-board functions including clock/calendar and floppy controller. Available options include sockets for 8087, SCSI, and 2 serial ports. **Place your order today!**

- RAM, Clock/Calendar, Floppy Controller On-Board!
- Sockets for 8087, SCSI, and 2 Serial-Port Options
- 8MHZ No Wait States, 4.5 faster than IBM!
- 80186 Processor, and 1 MB 16 Bit RAM On-Board.
- USA Designed and Built. USA Support for Board and BIOS!
- Call Now for Volume Pricing on Scheduled Quantities!

$576 - X16 BOARD W/1MB, CLOCK, FLOPPY CONTROLLER
$799 - X16 SYSTEM W/NICE KBD, CASE, PS, FLOPPY CABLE
$69 - X16 SYSTEM ASSEMBLY AND TESTING

HARD DISK SOFTWARE

HDTEST, by Gallery 6 ..... $ 99
HDTEST is a great software tool for the professional who installs or reformats hard drives in PC/XT/AT and compatibles. It features a sophisticated bad-track scan, and complete control of test setup including interleave, step code, autoconfig, drive type, etc. HDTEST was designed by disk drive experts for production quality control, so you know it's fast and thorough (100% machine language). This new software is far superior to other programs on the market. Includes a free PARK program. Order HDTEST today, you'll love it!

DISK MANAGER, by OnTrack $99
Enables you to break the 32mb DOS barrier! This powerful software initializes, partitions, and formats your fixed disk subsystem with up to 250mb per DOS partition! Another key feature is support for drive types not included in the XT and AT ROM's, giving you a full 62mb with our V185 drive (the AT ROM only gives you 52mb). In stock, so you can order today.

TAPE BACKUP SYSTEMS

IRWIN 100 SERIES
The industry standard tape backup for IBM and true compatibles. These are half height, low-power systems which run on your floppy controller. Software is included. The 10mb will work with PC/XT/AT. The 20mb will work with AT only.

Irwin 10mb with FREE TAPE $395
Irwin 20mb with FREE TAPE $539

WANGTEK 60mb SYSTEM
Fastest streaming tape backup system will back up 5mb/min. These systems include controller, cable, and very flexible software.
Wangtek 60mb with FREE TAPE $699

TAPE CARTRIDGES

Top quality DEI tapes. All are backed by a one year warranty. Call for quantity price.

DEI-442 45mb $21
DEI-555 55mb $22
DEI-862 60mb $23

RAM

64K $ CALL
128K $ CALL
256K $ CALL

Brand new prime parts. 150 ns. Full two year warranty.

CARDS for PC/XT/AT

Monographics w/printer port, very high quality ..... $ 89
Monographics w/parallel and serial ports $109
Color graphics w/printer port, IBM compatible ..... $ 95
Multifunction with par/ser/clk/game/0K/software ..... $ 99
Floppy controller for 4-360k floppies, w/cable for 2 ..... $ 35
Serial/parallel, w/optional 2nd serial. Great for AT ..... $ 55

PRICES SUBJECT TO CHANGE

VISUAL QUALITY

PAPER-WHITE MONITOR ..... SPECIAL $265
This Roland MB142 is the best monochrome monitor money can buy. Its non-glare matrix screen and inverse capability make it the perfect choice for demanding CAD and 132 column applications.

RGB COLOR 720x400 MONITOR $539
The Roland CD240 combines a non-glare black matrix CRT and very high bandwidth for smooth visuals. Backed by Roland quality and a full one year warranty.

MITSUBISHI SUPER-RES, 1024 x 768 MONITOR $1799
The Mitsubishi 6922LP is a 19V" high line-rate color display monitor with an in-line gun and analog input. Ideal for demanding CAD/CAM/CAE applications, **now with a new lower price — $1799.**

ARTIST I COLOR GRAPHICS BOARD $1169
This top-notch graphics board features 1024x1024 16 color resolution from a palette of 4096 colors. Compatible with AutoCAD, Symgraph, P-CAD, and many others.
New one-slot version $1375

FLOPPY DRIVE SPECIALS

AT 1.2MB $109
360K CHINON ..... SPECIAL $ 79
TEAC 55BV 360K ..... $ 89
TANDON TM100-2 ..... $115

ALL FLOPPIES 100% TESTED!

EX-2000 DISK DRIVE EXERCISER

EX-2000 aligns/repairs floppy drives with standard interface. Capable of writing or erasing to any track, finding alignment tracks with a single keystroke, and instantaneous and average speed checks. Top quality European keys, gold connectors, and easy scope hook-up to INDEX, READ/WRITE DATA, MOTOR ON make the EX2000 a fast and reliable tech tool. Requires: alignment disk for reference waveforms, scope for visual feedback, and the drive's service manual. An EX-cellent value at $299.00

SEE OUR FULL PAGE AD IN THIS SHOPPER

THE PROTO ADVANTAGE

EXTENDED WARRANTY NOW AVAILABLE In addition to our free one year warranty, you can now purchase an extended warranty on most computer hardware.
SATISFACTION GUARANTEED Your satisfaction is assured with our 30 day money back guarantee.
2% DISCOUNT FOR CASH Deduct 2% for cash (COD or prepaid).
TRUST OUR REPAIR SERVICES We're committed to quality products at competitive prices. We offer a complete repair facility and 10 years experience. We specialize in IBM and compatibles.
RESELLER/OEM PRICES Prices listed are reseller/OEM prices. Quantity one prices may be higher.
TERMS Deduct 2% for cash (COD or prepaid). VISA/MC add 2%. Prices subject to change without notice. $15 charge on all returned checks. 1.5%/mo. charge on overdue accounts. Resellers and corporate buyers please. Quantity one prices higher. IBM, Compaq, Lotus, AutoCAD, HP, Symgraph, PCAD, DeskPro, Sperry are trademarks of their respective companies.

Proto PC inc.
2424 Territorial Road, St. Paul, MN 55114

612-644-4660
Business Line 612-644-2383

Telex 910-380-7623
HOURS: 8 AM–6 PM/CST

THE FLOPLESS FLOPPY

MIDWESTERN DISKETTE DISTRIBUTION CENTER
1301 CLAYTON ROAD CRESTON, IA 50801

INFORMATION - 515/782-5190 - INFORMATION

THE FLOPLESS FLOPPY

ORDER - TOLL FREE 1-800-221-6332 TOLL FREE - ORDER

SEMI-ANNUAL WAREHOUSE CLEANING SALE

-Every six months we clean house and sell all odd lot, mistakes, overstocks and clearance items at reduced prices. A complete clearance listing will be sent with your order.

-Look for *W P B Pricing!!

*W P B means *WITH PHONE BOOK. All items carry a discount when you send us your local telephone book (or yellow pages) with your order. Help us expand our dealer data base let us help you to save money.

THIS SALE WILL LAST UNTIL ITEM AVAILABILITY IS EXHAUSTED.

SUPPLYING DEALERS AND SOFTWARE MANUFACTURERS NATIONWIDE

INVENTORY: 3-M, XIDEX, CONTROL DATA, DYSAN, BURNOLLI diskettes, disk packs, cartidges and tape. Diskette related supplies, storage cases, EDP labels, storage cases, drive cleaner, ribbons, paper, hardware covers.

SERVICES: Brand name products. Private and plain label packaging. Drop ship service. Competent telephone order/answer service. Advertising assistance. Software copy service.

DESCRIPTION	REG. PRICE	WPB* PRICE
5.25 paper disk envelope	$ 50/1000	$ 30/1000
5.25 private label mistakes		
-soft sector Single Side	$ 35/100	$ 25/100
-hard sector Single Side	$ 45/100	$ 35/100
-soft sector Double Side	$ 44/100	$ 34/100
-hard sector Double Side	$ 55/100	$ 45/100
-soft SSQD 96 tpi w/hub ring	$ 49/100	$ 39/100
-soft DSQD 96 tpi w/hub ring	$ 59/100	$ 49/100
-reversible SSQD 96 tpi w/hub	$ 89/100	$ 79/100
-DEC R'BOW format w/hub ring	$ 99/100	$ 89/100
-DEC R'BOW flippy w/hub ring	$129/100	$119/100
-LANIER formats w/hub ring	$129/100	$119/100
5.25 VERBATIM DATALIFE		
-Datalife brand SSDD	$ 75/100	$65/100
-MDDC label DSDD	$ 90/100	$80/100
8.00 CONTROL DATA		
-soft sector 10/box SSSD	$ 80/100	$ 70/100
3.5 SONY bulk		
-Single Side	$149/100	$139/100
-Double Side	$199/100	$189/100
5.25 DISK PROTECTION		
-100 capacity w/Lock	$ 11/each	$ 8/each
-SRW 10 capacity library case	$ 1.75/each	$ 1.40/each
-clear 2 piece 10 capacity	$ .95/each	$ .65/each
-4 disk cap. 8x11 binder page	$ 5/per 10	$ 4/per 10
3.5 DISK PROTECTION		
-10 capacity flip case	$ 1.50/each	$ 1.20/each
8.00 SRW LIBRARY CASE	$ 2.00/each	$ 1.00/each

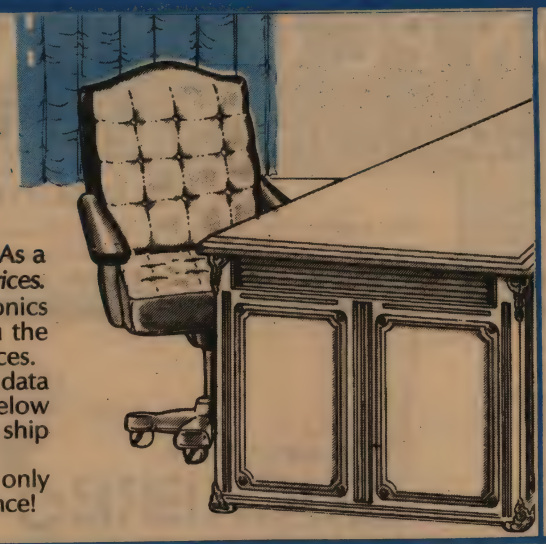
DESCRIPTION	REG. PRICE	WPB* PRICE
RIBBONS		
-APPLE IMAGEWRITER I	$ 2.90	$ 2.40
COLOR RIBBONS, R,G,B,BR,PURP	$ 3.50	$ 3.20
-PROWRITER (SAME AS APPLE)		
-APPLE SCRIBE	$ 4.00	$ 3.50
-BROTHER M/S OR NYLON	$ 4.50	$4.00
-COMMODORE MPS 801	$ 4.75	$ 4.00
-COMMODORE MPS 803	$ 5.00	$ 4.50
-COMMODORE 1526	$ 4.50	$ 3.90
-COMMODORE 1525	$ 5.00	$ 4.50
-DEC LA30/36	$ 2.00	$ 1.00
-DIABLO HYTYPE II M/S OR NYLON	$ 3.15	$ 3.00
-DIABLO HYTYPE II M/S BLU/BRN	$ 3.25	$ 3.00
-DIABLO HYTYPE I	$ 2.00	$ 1.00
-DIABLO MATRIX	$ 2.00	$ 1.00
-EPSON MX 80 NYLON	$ 2.40	$ 2.15
-EPSON MX 100 NYLON	$ 3.15	$ 3.00
-EPSON LX 80	$ 3.50	$ 3.00
-EPSON LQ 1500	$ 4.25	$ 3.50
-EPSON 185 NYLON	$ 3.15	$ 3.00
-IBM PROPRINTER	$ 3.75	$ 3.25
-IBM DISPLAYWRITER	$ 4.50	$ 3.50
-IBM 1/2" HARMONICA	$ 5.50	$ 5.00
-IBM 6240	$ 1.90	$ 1.40
-IBM BASEBALL BAT	$13.00	$ 9.00
-PANASONIC KXP 1093	$ 3.25	$ 2.75
-PANASONIC KXP 1090	$ 6.00	$ 5.50
-OKIDATA ML 82	$ 1.05	$ .90
-OKIDATA ML 182	$ 4.50	$ 4.00
-OKIDATA PACEMARK	$10.00	$ 9.00
-QUME 3	$ 1.90	$ 1.40
-QUME IV M/S BLACK,BLU,BRN	$ 3.50	$ 2.95
-RADIO SHACK DWPII NYLON,M/S	$ 3.00	$ 2.65
-RADIO SHACK LP VII	$ 5.00	$ 4.50
-RADIO SHACK LP 2100	$ 4.00	$ 3.50
-TALLY T1000	$ 2.75	$ 2.25
-TALLY T2000	$ 4.25	$ 3.75
-TOSHIBA 1340	$ 4.00	$ 3.50

TERMS: Company check, Money Order, Visa or Mastercard guarantee.
SHIPPING: diskettes = $2.50 per 100 or fraction; ribbons = $2.00 per doz.
All other items = 15% of value ordered. C.O.D. add $2.00.

MIDWESTERN DISKETTE DISTRIBUTION CENTER
1301 CLAYTON ROAD CRESTON, IA 50801
INFORMATION - 515/782-5190 - INFORMATION

ORDER - TOLL FREE 1-800-221-6332 TOLL FREE - ORDER

You Belong in this Picture—



You belong in this picture because you are a winner. As a successful person, you insist on reliable products at the *best prices.*

With more than twenty years experience in the electronics and computer fields, we are better qualified to give you the right answers, to make recommendations, and to offer choices.

MicroComputer Concepts is a major supplier of data processing hardware and software. Therefore the items below represent only a *partial* list of on hand products we can ship you immediately.

Because we know that winners like you will settle for only the best, we promise to work hard and to keep your confidence!

PRINTERS

BROTHER HR-15XL 17 CPS .....379.
M1509 180 CPS 15", TRACT .....379.
NEC P5 290 CPS, 132 COL N.L.Q...1049.
P5 XL COLOR N.L.Q. .....1179.
P6 200 CPS, 80 COL N.L.Q.....479.
P7 200 CPS, 132 COL N.L.Q.....669.
OKIDATA 182P/IBM 120 CPS .....219.
192P OR IBM 160 CPS .....309.
193P/IBM 160 CPS 15" .....479.
292+ 240 CPS, COLOR 18 PIN .....519.
293+ 240 CPS, 132 COL COLOR...669.
OKIMATE 20
w/PLUG 'N PRINT.....199.
PANASONIC
1091 120 CPS, 80 COL.....239.
1592 180 CPS, 132 COL .....439.
STAR NX-10 120 CPS & N.L.Q. .....249.
TOSHIBA
321 216 CPS 80 COL P & S.....499.
341 216 CPS 132 COL.....759.
351 288 CPS P & S .....1099.

SOFTWARE

APPLEWORKS .....199.
ASCII EXPRESS PRO .....69.
AUTOCAD DRAFTING PKG.....CALL
BANK STREET WRITER (APPLE) .....43.
CLIPPER .....349.
COPY II+, PC, MAC .....25.
CROSSTALK .....105.
DBASE III+ (IBM) 419
DOLLARS & SENSE (IBM) .....105.
FAST BACK .....99.
FLIGHT SIMULATOR II or JET.....35.
HOME ACCOUNTANT (APPLE) .....45.
LOCKSMITH (APPLE) .....59.
LOTUS 1-2-3 .....319.
MANAGING YOUR MONEY .....115.
MEGAWORKS .....69.
MICROSOFT WINDOWS .....65.
MICROSOFT WORD (IBM).....259.
MULTIMATE (IBM) .....279.
MULTIPLAN (APPLE) .....59.
NORTON UTILITIES 3.1 .....54.
PFS: FILE OR GRAPH OR
REPORT OR WRITE (APPLE).....70.
(IBM) .....79.
PRINTSHOP (APPLE) .....32.
PRINTSHOP COMPANION (AP) .....26.
LIBRARY DISK 1, 2 OR 3 AP) .....19.
PRINTSHOP (IBM) .....39.
RBASE 5000 .....259.
SAMNA WORD III .....289.
SIDEWAYS (APPLE, IBM).....39.
SPELLWORKS .....29.
SUPER PROJECT .....209.
TURBO LIGHTNING .....59.
VOLKSWRITER 3.....159.
WORD PERFECT 4.1 .....209.
PERSONAL WORDPERFECT .....89.
WORDSTAR 2000+ .....299.
WORDSTAR PRO (AP/IBM) .....259.

15 DAY RISK FREE GUARANTEE

PC/XT COMPATIBLE SYSTEM

★ 640 K Ram Memory ★ 6 Month Warranty
★ 2 ½ Hgt. 360K Drives ★ Graphics Card ★ Monitor
★ 135 Watt Power Supply ★ AT Style Keyboard
★ Clock/Calendar ★ Par/Ser & Joystick Ports
★ 8 Expansion Slots

$859 MONOCHROME $1049 COLOR
$50 TURBO OPTION
20 MEG HARD DRIVE $399

PC/AT COMPATIBLE SYSTEM

★ 1.2 MB Floppy Drive ★ 1 MB Ram Memory ★ Dual Speed (6 & 8 MHZ) ★
★ Monitor ★ Graphics Card ★ Printer Port ★ AT Style Keyboard ★

$1499 MONOCHROME $1699 COLOR

★★★★ OTHER CONFIGURATIONS AVAILABLE ★★★★

LASER 128 PERSONAL COMPUTER $395

Best of the Apple IIe & IIc
at HALF THE PRICE

TOSHIBA LAP TOP COMPUTERS

T-1100 512K RAM..$1499 T-3100 AT w/10 MB HD..$3499

US Robotics

MODEM $379
COURIER 2400 BD EXTERNAL
or
MICROLINK 2400 BD INTERNAL w/Software

MITAC
AD-3C Apple Disk Drive
for II+, IIe or IIc $109

star NX-10
120 CPS w/TRACTOR & N.L.Q.
$249

IBM COMPATIBLE HARDWARE

64K RAM CHIPS (SET OF 9).....12.
256K RAM CHIPS (SET OF 9).....29.
AST 6 PACK+64K+SIDEKICK.....169.
AST 6 PACK PREMIUM 512K.....339.
BERNOULLI BOX.....CALL
COPY II PC OPTION BOARD .....85.
DISK DRIVE CONTROLLER.....49.
GRAPHICS SOLUTION.....219.
INTERNAL HARD DRIVE SYSTEMS
SEAGATE 20 MEG w/WD CONT...399.
WD 20 MB FILE CARD .....549.
KENSINGTON MASTERPIECE .....99.
MULTI FUNCTION CARD.....89.
MOUSE w/DR HALO II .....119.
MODULAR GRAPHICS CARD .....259.
STB EGA+ .....294.
SUMMASKETCH 12" TABLET
w/DR HALO II.....369.

apple COMPATIBLE HARDWARE

16K RAM CARD FOR II+ .....39.
DANA FAN .....25.
EXTENDED 80 COL CARD
FOR //e (80 COL + 64K) .....59.
GRAPPLER+ PRINTER INTERFACE
SERIAL OR PAR w/CABLE .....79.
GRAPPLER C.....85.
HAYES MACH III JOYSTICK.....36.
KENSINGTON SYSTEM SAVER FAN
w/SURGE SUPPRESSOR .....60.
KOALA PAD //e, //c.....79.
MICRO-SCI A2 DISK DRIVE.....139.
MITAC DISK DRIVE II+,//e,//c ....109.
MOCKING BOARD .....79.
RAMFACTOR 256K MEMORY II+
(RUNS APPLEWORKS) .....189.
RAMWORKS 2, 64K.....139.
SUPER SERIAL CARD FOR
MODEMS & PRINTERS .....79.
TIMEMASTER II+, //e.....99.
TRANSWARP ACCELERATOR .....219.
VIEWMASTER (80 COL) .....119.
Z-80 PLUS CPM w/SFTWARE.....119.
Z-80C CPM FOR IIc .....129.

MODEMS

EVEREX EVERCOM 2 1200 BD
INTERNAL w/SOFTWARE.....139.
HAYES 300 FOR IIc w/SFTWR .....169.
1200 EXTERNAL .....379.
2400 EXTERNAL .....599.
1200B ½ CARD w/SMARTCOM ...359.
MITAC WISEMODEM 1200 BD ....154.
NOVATION APPLECAT II.....199.
APPLECAT 212.....379.
PROMETHEUS
1200 EXTERNAL .....269.
1200A APPLE INTERNAL .....199.
1200B INTERNAL w/SFTWR.....209.
US ROBOTICS
PASSWORD 1200 EXTERNAL .....189.

MONITORS

AMDEK 310 AMBER (IBM) .....149.
MITSUBISHI HI-RES RGB.....269.
NEC MULTI SYNC.....CALL
PRINCETON GRAPHICS
HX-12 .....469.
HX-12E .....529.
SAMSUNG TTL AMB OR GRN.....99.
TAXAN 620.....369.
TAXAN 640 w/555 CARD.....629.

CALL US FOR OUR LATEST LOW PRICES !

For Orders Outside California Call:

MasterCard VISA

800-772-3914

For Information & Orders Inside California Call:

714-898-3002

MICROCOMPUTER CONCEPTS

13772 GOLDENWEST ST. • SUITE 236 • WESTMINSTER, CA 92683

10/86

TERMS: Prices are F.O.B. Westminster, CA. For fastest service use C.O.D., Visa, Mastercard, money orders, certified or cashier's checks. All prices reflect a 2% cash discount, add 2% for Visa, MasterCard and Purchase Orders. Prices are subject to change and usually go down. This ad is prepared 2 months in advance. Call for latest, lowest prices. Products carry manufacturer's warranty. Apple is a registered trademark of Apple Computer. Ask about our return policy. For your protection, we report all fraudulent credit card orders.

ATTENTION PC COMPATIBLE BUILDERS

SAVE WITH CONFIDENCE – CALL MIDWEST MICRO

NO TAX CHARGED TO RESIDENTS OUTSIDE OHIO
SAME DAY SHIPPING ON ALL ITEMS IN STOCK
TECHNICAL SUPPORT

PRICE GUARANTEE

We at MidWest Micro guarantee that we can save you up to 69% or more on your purchase of new fully warranteed equipment and supplies. And we will still give you friendly, courteous service. Call today and Save With Confidence!

ONE CALL SHOPPING TOLL FREE
DEALERS CALL 800-528-4504

MidWest Micro-Peripherals
135 South Springfield Street Saint Paris Ohio 43072
Phone (513) 663 5488

Comuter Builders,

Why not let MidWest Micro help you save on quality components? We offer carefully built and tested boards complete with user manuals to take the problems out of your work. We support you with a total solutions whether you are assembling one or one thousand IBM' compatibles. With MidWest Micro and Dr. Zucker on your side you can win in the constant effort to get quality products at the most competitive prices.

So please call us today and begin to "Save with Confidence" on computer board products.

Sincerely

Mark Runkle
President
MidWest Micro

Please send me a 20 page PREFERRED CUSTOMER CATALOG. I am enclosing $1.00 and understand that a coupon for $2.00 off my purchase is enclosed in this special catalog.

Name _____
Address _____
City _____ State _____ Zip _____

Dr. Dr. Zucker

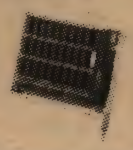
It's another ZUCKERBOARD

Just open the box and your ZUCKERBOARD is ready to use. All Zuckerboards are MADE IN THE U.S.A. But they cost less because they use custom large-scale integrated circuits. Every one has been designed by the good Doctor himself and is of the highest quality money can buy. And you get a TWO-YEAR Warranty. Just what the Doctor ordered!

576 RAM HALF CARD

$69

Without memory LIST PRICE $119

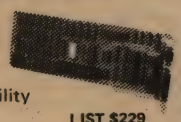


- Full IBM PC, XT compatibility
- Brings System up to 640K
- Uses 64K and/or 256K DRAM
- Low power consumption
- Optional Clock/Calendar Add $39 with 20-year battery

384K Half Card	$149
512K Half Card	179
576K	199
Add Clock/ Calendar	229

MONOCHROME GRAPHICS CARD

Only **$99**
With Parallel Port LIST PRICE $379



LIST $229

- Full IBM PC, XT, AT compatibility
- TTL monochrome output
- 720 x 348 pixel graphics
- Hercules monographics compatible
- Parallel printer port
- 64K video RAM built-in
- IBM and Lotus 1.2.3 compatible

TANDY 1000 RAM CARD

- Full Tandy 1000 compatibility
- Brings System to full 640K
- DMA Controller on board
- Low power consumption
- Optional Clock/Calendar with 20-year battery

With 256K Only **$109**
Add Clock/Calendar $39

With 512K RAM Just **$149**

COLOR GRAPHICS HALF CARD

$99 With Parallel Port LIST PRICE $229

- Full IBM PC, XT, AT compatibility
- 640x200 mono; 320x200 color pixels
- Hercules Color Card compatible
- Parallel printer port
- Light pen interface
- Low power consumption
- FCC Certification

Dealers – Call 800-528-4504 and begin increasing your margins and customer satisfaction!

"In Stock" HARD DRIVES - FLOPPIES - HARDCARDS

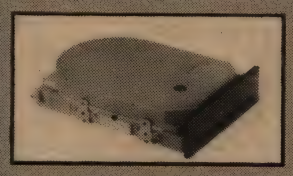
— from Leading Manufacturers —

HARD DISKS

Improve Your Performance and Security with Disk Drives from Midwest Micro.

MidWest Micro assures availablity of the latest technology with consistent quality and lowest possible cost.

-SEAGATE -Memtec -NEC

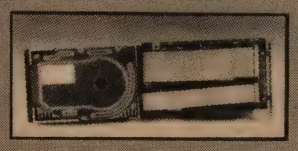


ALL KITS ARE
- Formatted
- Tested
- Includes Mounting Hardware
- Auto Boot
- Includes Western Digital Controller

- 20 MEG Model 225 **Kit** ..... **$449** each
- 30 MEG Model 4038 AT **Kit** .... **659** each
- 40 MEG Model 4051 AT **Kit** .... **779** each

HARD CARD

$495



Features:
- IBM XT Compatible
- Easy Installation
- Formatted and Tested
- Auto-boot
- Works in a Variety of IBM Compatible Machines
- Plug it in to Expansion Slot
- Comes Ready to Run
- Boot Directly from Drive Plus

Specifications:
- Capacity 20MB
- Transfer Rate 5.0Mbit/Sec.
- Average Access Time 85MS
- Cylinders 306
- Read/Write Heads 4
- DC Voltage Requirements (in amps)
  12 VDC Typical 0.9A
  5 VDC Typical 0.5A

CONTROLLERS

Western Digital	$129
Floppy Controller	49

Low as $69

FLOPPY DRIVES

TANDON – QUME – FUJITSU – TEAC

TAPE BACK-UP

- 20 Mb Memtec ½ Height Kit Internal With Controller **$549**
- 60 Mb Archive External Type Tape Drive **$975**

VISA MasterCard AMERICAN EXPRESS

For your protection we check thoroughly for stolen credit cards.

CALL TOLL FREE FOR INFORMATION OR ORDER
(800) 423-8215
IN OHIO CALL - (800) 321-7731 • DEALERS CALL - (800) 528-4504
OHIO DEALERS CALL (800) 222-6571
HOTLINE: 513-663-4992 (For Technical Assistance or Information on Your Order)

MONDAY-FRIDAY
9 AM - 6 PM (EST)
CLOSED SATURDAY
PRICES SUBJECT TO CHANGE
AVAILABILITY AND TYPE ERRORS

MidWest Micro-Peripherals

135 S. Springfield St., Saint Paris, Ohio 43072

MEMBER DIRECT MARKETING ASSOCIATION

All equipment shipped factory fresh with manufacturers warranty

HIGH TECHNOLOGY — NOT HIGH PRICES

Confused About Monitors?

SAVE WITH CONFIDENCE – CALL MIDWEST MICRO

MidWest Micro-Peripherals
135 South Springfield Street, Saint Paris, Ohio 43072
Phone [illegible] 5488

Friends,

It seems that there is a bit of confusion surrounding monitors and their selection. This is especially true of color monitors. How many colors? What horizontal by vertical resolution? Can I get a really good color monitor for less than $350?

In order to give you the right monitor at the right price, we had to first determine what was the main quality in a monitor for comparisons. As it turns out, the actual distance from the center of one dot to the next or "dot pitch" is the best parameter to compare. The "dot pitch" determines the continuity of your characters and graphs.

Secondly we had to find a manufacturer of outstanding quality and integrity who makes a major portion of the monitors for well known "name brand" product lines. A monitor is a precision instrument and no Johnny-Come-Lately would do.

After a thorough search, we found that by making a large commitment we could bring to you a premier product at a bargain price.

So whether you need one or one hundred quality computer monitors, call us now and do yourself a favor. Experience quality and affordability with Goldstar Computer monitors.

Sincerely,
Mark Runkle
President
MidWest Micro

Let MidWest Micro and Goldstar clear up your confusion and rescue your computer equipment budget.

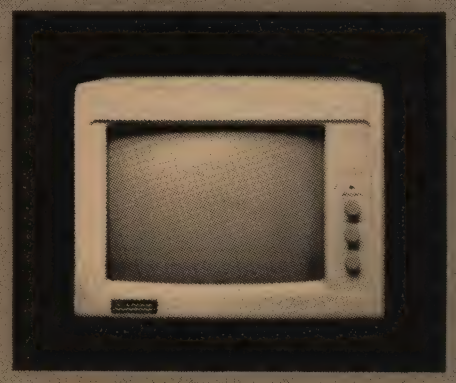
MONOCHROME VIDEO MONITORS

Acknowledged as superior, Goldstar Monochrome Video Display Monitors offer a wide selection, a wide array of features and are designed for the great variety of applications required by business and personal use. Extensive video experience has resulted in monitors of sleek design, rugged dependability and extraordinary quality. Goldstar monitors are unsurpassed in value and performance.

MBH-2003

List $159 Just **$69**

An extraordinary 12" display, the MBH-2003 offers a resolution of 1,100 lines at center and provides easy viewing for displays of up to 132 characters per line, 25 lines per screen. Text/graphic displays are unequalled in quality, and the amber display, anti-glare screen is easy on the eyes. It is a must for heavy usage. There is no comparable competitive value. Styled to match the IBM PC, the 2003 is compatible with most personal computers that produce a composite video signal.



MBM-2015

Just **$99** green Just **$69** amber

This 12" display monitor is designed for IBM PC and other PC compatibles. The high resolution of 900 lines at center provides excellent character definition. Complemented by a non-glare, high contrast screen, the 2015 is easy on the eyes and excellent for extended viewing. The separate ttl input signals are accepted via a 9-pin connector, the standard connection to the IBM monochrome display card.

COLOR VIDEO MONITORS

Goldstar color video display monitors provide the enhanced performance required of today's personal and business micro computers. High resolution, vivid image displays are suitable for the most demanding applications. The medium resolution display monitor provides sharp, clear characters and graphic elements. These monitors are designed to minimize eyestrain by eliminating glare. Goldstar color monitors are compatible with a wide variety of personal computers and video systems.

Image stability, depth-of-color and picture clarity are the performance objectives. Goldstar meets them.

MCM-4035

List $549 NOW **$299**

The 13" MCM-4035 delivers superior value. The medium resolution color display creates a very sharp image. Sixteen colors are produced on the anti-glare screen and up to 2,000 characters fit on the display. High reliability combines with high quality image production to make it a flexible, multi-purpose color monitor for most micro computer applications. The 4035 accepts RGB direct drive input, and, the controls are located behind the front panel for both easy access and clean, aesthetic appeal.

MCH-4015

NOW **$339**

The 13" MCH-4015 delivers the extra sharp, high resolution quality images demanded by presentation graphics. Top-of-the-line performance combines features such as an anti-glare screen and 31-mm dot pitch to provide continuous, easy viewing. It accepts RGB direct drive input, and, the controls are located behind the front panel for both easy access and clean, aesthetic appeal to compliment any work area.

CGA-Compatible Monitors: Summary of Features

Manufacturer	Model	List Price	Screen Size	Dot Pitch	Horiz Freq	Vert Freq
Amdek	Color 600	$599	13	0.43	15.75	60
Amdek	Color 710	$699	13	0.31	15.75	60
IBM Corp	Color	$680	13	0.43	15.75	60
Princeton Graphics	HX-12	$695	11.5	0.31	15.70	60
Thomson Products	CM36382Si	$529	14	0.38	15.70	60
Wyse Tech	WY-620	$545	13.5	0.43	15.75	60
Goldstar	MCM-4035	$549	13	0.43	15.75	60
Goldstar	MCH-4015	$659	13	0.31	15.75	60

DEALERS —

CALL FOR PROFIT PRODUCING PRICES ON THESE HIGH QUALITY GOLDSTAR PRODUCTS.

PHONE 800-528-4504

VISA MasterCard AMERICAN EXPRESS

For your protection we check thoroughly for stolen credit cards.

CALL TOLL FREE FOR INFORMATION OR ORDER

(800) 423-8215

IN OHIO CALL - (800) 321-7731 • DEALERS CALL - (800) 528-4504
OHIO DEALERS CALL (800) 222-6571

HOTLINE: 513-663-4992 (For Technical Assistance or Information on Your Order)

MONDAY-FRIDAY
9 AM - 6 PM (EST)
CLOSED SATURDAY

PRICES SUBJECT TO CHANGE
AVAILABILITY AND TYPE ERRORS

MidWest Micro-Peripherals

135 S. Springfield St., Saint Paris, Ohio 43072

MEMBER DIRECT MARKETING ASSOCIATION

All equipment shipped factory fresh with manufacturers warranty

HIGH TECHNOLOGY — NOT HIGH PRICES

Best Business Printer Buys In U.S.

420 CPS COMREX CR-420 Business Printer MOVES MOUNTAINS

MidWest Micro-Peripherals
135 South Springfield Street, Saint Paris, Ohio 43072
Phone [illegible]

Friends,

MidWest Micro has landed for you two of the best continuous duty, business quality printers anywhere. And the values absolutely cannot be beat! Through special arrangements we are able to offer a limited quantity of Comrex CR-4 daisywheel and CR-420 high speed dot matrix printers at unbelievable savings.

These printers are new in factory containers and come to you complete with manufacturers warranty.

Again this is a limited offer and will not be repeated. So call now and "Save with Confidence" to the tune of several hundreds of dollars.

We at MidWest Micro will continue to do our best for you. Thank you for your generous patronage.

Sincerely,

Mark L. Runkle
President

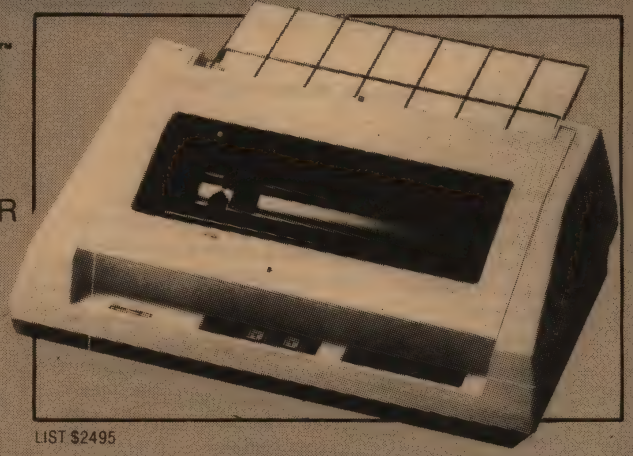
COMREX™

CR-420

NOW WITH IBM PRINTER EMULATION!

JUST

$895



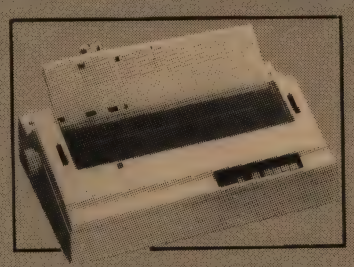
LIST $2495

This stupendous brute of a printer will make short work of even your largest spreadsheets and reports. You will surprise yourself and amaze your friends and colleagues with this super printer performing in your office. Don't miss out on this one!

SPECIFICATIONS

Carriage Width: 132 Columns (at 10 pitch)
Print Method: Impact dot matrix, bidirectional, logic seeking in both text and graphics
Print Speed: 420 CPS/Draft; 104 CPS/Correspondence Quality; 2500 dots/sec. – standard graphics; 1250 dots/sec – high-density graphics
Print Head: 8-pin, staggered arrangement
Character Sets: Standard 96 ASCII printing in 17 fonts
Line Spacing: n/180 (n=0-255)
Paper Feed: Pin feed (paper width adjustable) and built-in friction feed
Paper Width: 5" to 15" (pin feed); Up to 16" (feed)
Paper Path: Rear and bottom entry
Paper Thickness: Original plus 4 copies (5-part)
Ribbon: Cassette style, single color (black)
Interfaces: Parallel – Centronics-style; and Serial –RS232C Asynchronous
Baud Rate: 1200, 2400, 4800, 9600; switch selectable
Protocols: X-ON/X-OFF, READY/BUSY, ETX/ACK, switch selectable
Buffer: 18K
Reliability: MTBF – 800 hours continuous printing; MCBF – 200 million characters; MTTR – 30 minutes
Power: 117 VAC ± 10%, or; 220 VAC ± 10%, 50/60 H_z
Power Consumption: 55W (Standby); 175W (Operating at self test print); 250W (Operating at heaviest duty)
Environmental Limits: Temperature (operating) 5°-40°C; 40°-105°F; Humidity (operating) 20-80%
Dimensions: 595mm (W) x 194mm (H) x 405mm (D); 23.4" (W) x 7.6" (H) x 15.9" (D)
Weight: 27kg; 60 lbs

Extra Long CR 420 Ribbon Cartridges $16.95 6+ $14.50



COMREX™

CR-4

Your Price Just

$399

Was $1995

2+ $369
3+ $349

- **Superior Performance**
- **Fast 36 CPS Print Speed**
- **7K Print Buffer**
- **Continuous Duty Cycle**
- **Wide 16-5" Paper Carriage**

This bidirectional, logic seeking marvel lets you adjust the hammer intensity to print anything from single-page letters to five-part forms with equal clarity. A variety of impressive typestyles give you added print versatility.

It is exceptional in many other ways. The 15½" wide carriage briskly prints all your ledgers, spreadsheets, and extra wide business graphics with ease. With the optional cut sheet feeder and tractor feeder, you can print several copies on your letterhead and switch to pin-fed paper for high volume word or data processing.

The 7K buffer holds a substantial amount of data while its printing.

The average life of the print wheel is 10 million characters. Which means that you can run it eight hours a day — every day of the week — for almost two full years. Of course, under more normal usage, it will handle your business correspondence and graphics for up to five full years without service. That's impressive.

Quiet quality.
What your eyes don't tell you, your ears will. Because this printer is much quieter than many more expensive printers. So you can keep the noise down while you keep the cost down.

Specifications

Print Speed	36 CPS (Shannon text)
Print Wheel	96 petals/wheel, cassette type, ASCII stand.
Print Wheel Life	10 million char./wheel
Characters/Line	132 characters (1/10"), 158 characters (1/2"), 198 characters (1/15")
Paper Width	16.5 in max (419 mm)
Copy Capacity	Original (45 kg) + 4 copies (15 kg) (total thickness 0.35 mm max.)
Carriage Motion	Bidirectional, logic seeking
Carriage Rtrn Speed	750 ms (at 13.2" return)
Line Spacing	6, 4, 3 lines/inch, 1/48" proportional increments
Paper Feed	Bidirectional, logic seeking
Paper Feed Speed	4"/second
Available Ribbons	Ribbon Life
Single-strike black carbon film	60,000
Multi-strike black carbon film	150,000
Single-strike black correctable film	70,000
Multi-strike black fabric	500,000
Single-strike red film	2,000
Correction tape	1,500
Interface	Standard RS-232C – Serial
Buffer Size	7K
Control Panel	Indicators: Select, Power, Alarm, Line, Pitch, and Copy (LEDs) Switches: Select, Line Feed, TOF, Line, Pitch, and Copy
Noise	Operating – Less than 65 dB
Temperature	50 to 105 F – 10 to 40 C (operating)
Humidity	20% to 80% non-condensing (operating) 5% to 90% non-condensing (storage)
Power	120 V, 60 Hz (Optional: 120 or 220 - 240 V, 50/60 Hz) 130 W Max.
Dimensions	21.18 (W) x 7.65 (H) x 15.15 (D) inches (538(W) x 194.5 (H) x 385 (D) mm)
Weight	33 lbs (15 kg)
Optional Features	Tractor feeder, Auto Cut Sheet Feeder, Single and Multi-strike ribbons, Interchangeable printwheels (Numerous languages and typestyles)

VISA MasterCard AMERICAN EXPRESS

For your protection we check thoroughly for stolen credit cards.

CALL TOLL FREE FOR INFORMATION OR ORDER

(800) 423-8215

IN OHIO CALL · (800) 321-7731 • DEALERS CALL · (800) 528-4504
OHIO DEALERS CALL (800) 222-6571
HOTLINE: 513-663-4992 (For Technical Assistance or Information on Your Order)

MONDAY-FRIDAY
9 AM - 6 PM (EST)
CLOSED SATURDAY
PRICES SUBJECT TO CHANGE
AVAILABILITY AND TYPE ERRORS

MidWest Micro-Peripherals

135 S. Springfield St., Saint Paris, Ohio 43072

MEMBER DIRECT MARKETING ASSOCIATION

All equipment shipped factory fresh with manufacturers warranty

HIGH TECHNOLOGY — NOT HIGH PRICES

TOO GOOD TO BE TRUE!!

SAVE WITH CONFIDENCE – CALL MIDWEST MICRO

NO TAX CHARGED TO RESIDENTS OUTSIDE OHIO
SAME DAY SHIPPING ON ALL ITEMS IN STOCK
TECHNICAL SUPPORT

PRICE GUARANTEE
We at MidWest Micro guarantee that we can save you up to 69% or more on your purchase of new fully warranteed equipment and supplies. And we will still give you friendly, courteous service. Call today and Save With Confidence!

ONE CALL SHOPPING TOLL FREE
DEALERS CALL 800-528-4504

MidWest Micro-Peripherals
135 South Springfield Street, Saint Paris, Ohio 43072
Phone (513) 663-5488

Fellow Computer Users,

Through special arrangements we have been authorized to offer you one of the most popular printers of all time at a "give away" price. Yes, we've sold thousands of the ever popular Gemini 10X printers at nearly twice the price. The 10X is a great choice for both business and home applications. Those already using our Star Gemini 10X's include about everyone from Bell Labs to my brother's kids.

I'm absolutely delighted to be able to offer you this durable and versatile printer for only $179. And you can expect the same friendly, courteous service both before and after the sale plus full warranty care from MidWest Micro.

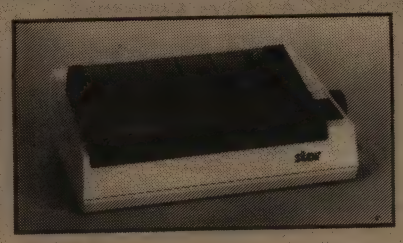
Our supply is limited and they can't last long at this unbelievable price. So call today and get the buy of the year!

Sincerely
Mark L. Runkle
President
MidWest Micro

star micronics · inc
Buy from the nations largest Direct Authorized Star Micronics Dealer and Service Center

NOW you can get the most printer for your dollar with. . .

Gemini 10X



NOW ONLY
$179
LIST $399

If you are looking for a top quality printer at an affordable price, you've found both in the Gemini 10X. The Gemini 10X operates bi-directionally at 120 cps. It switches from standard 80 column printing to 132 column condensed and 96 standard ASCII characters. This gives you the capabilities to do everything from recipes to spreadsheets. The character matrix offered includes the descenders, emphasized, double strike, block graphics and hi and low bit image graphics. These features give the Gemini 10X versatility enough for use in your home or office. The Gemini 10X also features a buffer expandable to 8K that lets you continue to work – not waste your time waiting on your printer. Breakdowns? Virtually unheard of with the Gemini 10X – with a print head life of over 100 million crisp, clean characters. The Gemini 10X comes complete with both friction and adjustable tractor feed. It even includes a free roll paper feed mechanism for greater economy.

Quantity Purchasing Buy 3+ @ $169 ea.
6+ @ $159 ea.
25+ *$CALL$*

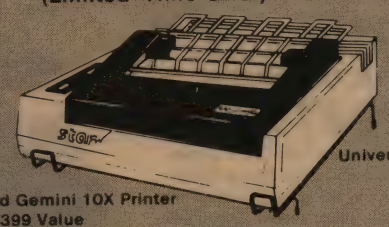
Complete star Gemini 10X PRINTER PACKAGE

From MidWest Micro

JUST **$219** (Limited Time Offer)

Save $314

Printer Package Includes:
1. Full Featured **star Gemini 10X Printer**
2. A **Universal Printer Stand** which tilts printer toward you for easy access and creates space for organizing paper
3. Attractive Heavy-Duty vinyl **Printer Cover** – anti-static and anti-dust
4. Plenty Pack of 20# bond clean-edge fanfold **Paper**
5. 2 Super length **Ribbons** for Gemini 10X
6. **Miniature Computer Clock** with 5 function quartz works and swivel monitor stand
7. Full **1 year Warranty** parts and labor
8. Free use of MidWest Micro's Customer **Support Hot Line** (513-663-4992)



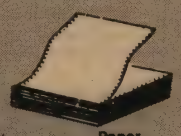
Full Featured Gemini 10X Printer $399 Value

Ribbons $18 Value

Universal Printer Stand $49 Value

Popular Miniature Computer Clock $19 Value

Heavy-duty Vinyl Cover $19 Value



Paper $29 Value

Quantity Purchasing 3+ $209 6+ $199

star Gemini 15x (15½" carriage) Buy 1 @ $269
3+ @ $259
6+ @ $254
25+ $CALL$

star Gemini 15x Package $309 3+ @ $299
Includes Same Great Bonuses as 10x Package

VISA MasterCard AMERICAN EXPRESS
For your protection we check thoroughly for stolen credit cards.

CALL TOLL FREE FOR INFORMATION OR ORDER
(800) 423-8215
IN OHIO CALL - (800) 321-7731 • DEALERS CALL - (800) 528-4504
HOTLINE: 513-663-4992 (For Technical Assistance or Information on Your Order)

MONDAY-FRIDAY
9 AM - 6 PM (EST)
CLOSED SATURDAY
PRICES SUBJECT TO CHANGE
AVAILABILITY AND TYPE ERRORS

MidWest Micro-Peripherals

135 S. Springfield St., Saint Paris, Ohio 43072

MEMBER DIRECT MARKETING ASSOCIATION

All equipment shipped factory fresh with manufacturers warranty

HIGH TECHNOLOGY — NOT HIGH PRICES

TIMELINE INC.

CALL US FOR ALL YOUR NEEDS!
We have 10 Million I.C.'s in stock!
Minimum I.C. Order: $200.00

Continental U.S.A (800) 872-8878
Inside California (800) 223-9977
L.A. & Technical Info (213) 217-8912

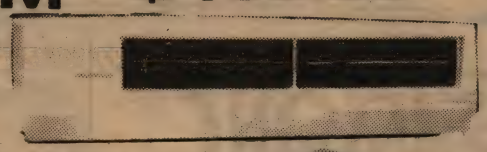
OEM INQUIRIES WELCOME

Multitech MIC-500/504 CP/M SYSTEM

JUST ADD A TERMINAL!
$199.00

INCLUDES: 2 48 or 96 tpi drives Your choice
Z80A Microprocessor
Ports: Centronics parallel, Two serial

Comes with all software & manuals:
Magic Worksheet, Word Right, Analyst, QSORT, NAD (Name and Address System)



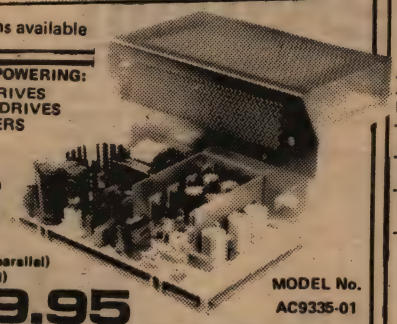
100 Systems available

ASTEC 65 WATT SWITCHING POWER SUPPLY

Dual input voltage 115/230 VAC - Overvoltage protection - Short circuit protection - Dual isolated +12V - Built-in EMI filter - Very compact size -,UL/CSA/VDE approved - 100% thermal cycle & burn-in - High efficiency - Vaccum impregnated transformers - Convection cooling - Open PCB "L" bracket or boxed construction.

PERFECT FOR POWERING:
- HARD DISK DRIVES
- FLOPPY DISK DRIVES
- MINICOMPUTERS
- CRTs

Dimensions:
8.0" - Length
4.4" - Width
2.4" - Height



OUTPUTS:	Condition No.1	Condition No.2
	+5V DC@ 6.0A	+5V DC@ 5.0A(with two + 12V outputs in parallel)
	+12V DC@ 1.5A	+12V DC(with two + 12V outputs in parallel)
	+12V DC@ 2.1A	@3.5A (5.0A surge)
	−12V DC@ 0.25A	−12V DC@ 0.25A

MODEL No. AC9335-01

$39.95

MOTOROLA 7" DIAGONAL SCREEN HIGH RESOLUTION GREEN SCREEN MONITOR

22 MHZ TYPICAL BANDWIDTH
4 for $99.00

NEW! IN BOX

$29.95
MODEL MD1700

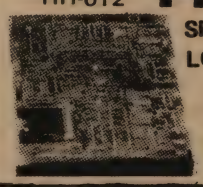
- Flat Faceplate
- 900 lines at Center 650 lines at corners.
- Operates from 12VDC at 1 Amp.
- Vertical input is 47 to 63 Hz.
- Horizontal input: 15.7 Khz (18.7 Khz optional)
- Video input signal: Positive white, input termination 470 ohms ± 5%, 2.5V to 5.0V P-P

Weight: 6lbs.

For split video (TTL Inputs) operation. Not composite video.

MICROSCIENCE HARD DISK DRIVE

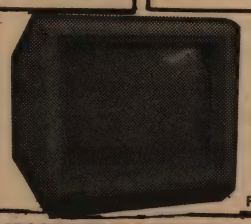
Model HH-612



SPECIAL LOW PRICE: **$189.00**

$289.00 With controller card & cables
15 Mb System - $329.00
30 Mb Removeable System - $429.00 Includes: (2) ½ Height Drives & Controller card (with cables)

bui MODEL NO. CT-AA1403 13" COMPOSITE COLOR



RCA JACKS FOR: VIDEO IN/OUT and AUDIO IN/OUT
RESOLUTION: 260H by 300V
GREEN/COLOR SELECTOR

$109.00
For VCR-Atari-Apple-Commodore

286 SPEED PAK FOR IBM PC & XT

CLASSIC TECHNOLOGY CORPORATION

UP TO 7 TIMES PC SPEED

- Increases speed of PC/XT to make it 33% faster than an AT
- 20–30% faster than boards that use cache
- Compatible with IBM Enhanced Graphics Adapter and the Lotus/Intel above board
- Can run programs designed for the AT's and also PC/XT's
- No software patches needed
- Includes native mode
- Made in U.S.A.

$770.00
3 Year Warranty

SSB-APPLE

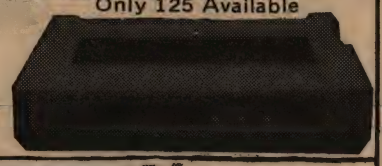
PROGRAMMABLE SYNTHETIC SPEECH GENERATION BOARD
PLUG COMPATIBLE WITH APPLE II MICROCOMPUTERS. Can be easily controlled by BASIC. Uses TMS5220 for: Low-data-rate LPC encoding. +5V & -5V supplies only - TTL Compatible
INCLUDES: Software and Speaker

$79.00

TEC MODEL 1550 DOT MATRIX/NEAR LETTER QUALITY SERIAL IMPACT PRINTER

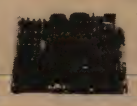
These very high quality printers were made for Phillips Information Systems. Original price was: $795.00

Liquidation Blow-out!
$279.00
Only 125 Available



Features: 15" Carriage-120 CPS-Parrallel Interface-Low power consumption-High quality print-Bit image graphics-Graphics symbols-Prints in six different languages-High reliability-And finally...Low Cost!

EPSON QX-10 MOTHERBOARD WITH VIDEO CARD & YOUR CHOICE OF ASCII KEYBOARD (ENCLOSED) OR HASCII (BARE)



$169.95

ONLY 250 SYSTEMS AVAILABLE!
Will work with any IBM compatible disk drive • CPU: μPD780AC-1 (Z80A compatible, 4 MHz) • Memory-RAM: 256K on board; Video RAM: 128K on CRT board; C-MOS RAM: 2K; EPROM: 2/4/8K (for IPL). Clock: C-MOS real-time clock. Interface: Serial and Parallel. DMA: 7 channels. Interrupt levels: 15; Counter/timer: 6 channels. Card slots: 5. Compatible with any TTL monitor. Weight: 10 lbs. with enclosed keyboard, 8 lbs. with bare keyboard.

KEPCO/TDK SWITCHING POWER SUPPLY

$39.95

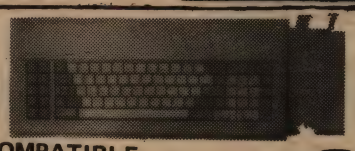
ONLY 250 AVAILABLE!
Model EFX 100T-3 100W • +5V @ 8A • −5V @ 1.5A • +12v @ 2.0A • −12V @ 2.0A • Input Voltage: 100 to 130Va-c or 200 to 260Va-c. 47-440 HZ. Single phase • Brownout Voltage: 90Va-c/180Va-c • Fused Input/Output protected against short circuit. Dim: 9⅝"L x 4 15/16"W x 2⅛"H, Weight: 3 lbs., Spec Included.

SIEMENS 8" DISK DRIVE

$44.95
OR 2 FOR
$69.95

FDD100-8. Shugart 801R equivalent. Single Sided. Single/Double Density. Full Height Drive. 48 tpi. Documentation included. Specify 110 or 220 Volt Model • These drives are new and sold AS IS. Weight: 14 lbs.

IBM PC/XT (or Jr.) REMOTE KEYBOARD



This high quality keyboard was made by Cherry whose original cost was $279.00
BLOWOUT PRICE!

COMPLETELY IBM COMPATIBLE
Control your computer from across the room with this infrared keyboard or hook directly like a regular keyboard.

$69.00

NASHUA DISKETTES 5¼" SOFT SECTOR

DS/DD with hub rings, sleeves, write protect tabs and labels.

$8.00 BOX OF 10
.70c 5 BOXES OF 10
.62c 10 BOXES OF 10

Nashua Diskettes were judged to have the highest polish & recorded amplitude of any diskettes tested. According to "Comparing Floppy Disks" Byte 9/84.

RICOH PRINTER RP 1200N

Centronics Interface
-Daisy Wheel
$400.00

4164-15 89c

100 pc. min. qty.

DISK DRIVE CABINET $12.95

• Full Height Disk Drive case for Apple • Fits 2 half height drives. Can be modified for other uses. Dim: 9⅝"L x 6"W x 3½"H, Weight: 3 lbs.

Switchable Power Supply

110/220V 141 Watt
Dim: 10x8x3-3/8
Weight: 7lbs.

+5V	@ 2.0A
+5V	@ 3.5A
+12	@ 0.1A
-12V	@ 0.2A
+12V	@ 2.0A

$49.95

HIGH CAPACITY AMLYN 1860A DRIVE

5¼" DS/High Density
3.2 mByte Unformatted
2.3 Formatted
Takes 8" controller to operate

$139.00
Wt: 4lbs.

Tandon 848-2

IBM COMPATIBLE
DOUBLE SIDED/DOUBLE DENSITY
1/2 HEIGHT - 8" DRIVE
1.6 mByte Unformatted
1.2 Formatted
Wt: 7lbs.
$199.95

Tandon TM55-4 Disk Drive
½ Ht. - 80track - DS/DD $69.00

Standard Data - Local Area NETWORK BOARD

With Software $150.00

SERIAL PRINTER /MODEM CABLE (Male to Female)

$7.95 1/2 OFF!

FOR USE IN SERIAL APPLICATIONS Such as Serial Printers and Modems.

- 15' Length
- Full double shield of Mylar foil
- Tinned copper braid
- 24 AWG wire
- Molded DB 25 pin male & female connector
- All solder mount pins are plated
- Pins 1-8 & 20 Wired
- Color: Beige

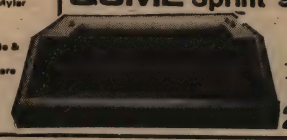
"Spy in the Sky" Fairchild CCD122 1,728 ELEMENT ★ Linear Image Sensor

$29.95

"The Twilight Zone" ★

Designed for page scanning applications including facsimile, (Optical Character recognition and other imaging applications which require high resolution and high sensitivity.

QUME Sprint 9/35 KSR TERMINAL/ PRINTER



-35 CPS
-Serial Interface
51lbs.
299.00

TIME LINE INC.

1490 W. ARTESIA BLVD., GARDENA, CA. 90247
Continental U.S.A. (800) 872-8878
Inside California (800) 223-9977
L.A. Area & Technical Info (213) 217-8912

VISA MasterCard

Inquiry 361

Minimum Order: $25.00. Shipping & handling charges via UPS Ground: $.50c/lb. UPS Air: $1.00/lb. Minimum Charge: $4.00. We accept cashiers checks, MC or VISA. No personal check COD's. Items reflect 5% cash or check discount. California residents add 6½% sales tax. We are not responsible for typographical errors. All merchandise subject to prior sale. Phone orders welcome.
Foreign Orders require special handling

CALL TODAY TOLL FREE!

1 800 USA-FLEX

(1 800 872-3539)

7 to 7 Central Time • 10 to 3 Saturdays

IN ILLINOIS 1 800 FOR-FLEX (1 800 367-3539)

PAGE 1

SONY®

MAC•PAC

3½" SS Disks, packaged in 50s

$1.15 each, Qty. 400
$1.20 each, Qty. 100
$1.24 each, Qty. 50

3½" DS Disks, packaged in 50s

$1.65 each, Qty. 400
$1.70 each, Qty. 100
$1.74 each, Qty. 50

SONY

Boxed in tens	50+	100+
3½" SS	1.30	1.28
3½" DS	1.99	1.95
5¼" DS/DD	.99	.95
5¼" HD	2.09	1.99

maxell.

3½" SS Disks
Packaged in fifties

$1.20 each, Qty. 400
$1.25 each, Qty. 100
$1.30 each, Qty. 50

maxell.

Boxed in tens	50+	100+
3½" SS	1.28	1.26
3½" DS	1.97	1.93
5¼" DS/DD	.97	.93
5¼" HD	2.07	1.97

MEMOREX

	100+
5¼" SS/DD	.73
5¼" DS/DD	.79

3M

5¼" DS/DD Boxed in tens

1000+ **89¢** each

99¢ each, Qty. 50 95¢ each, Qty. 100

SOFTWARE CLOSE OUT

WORDSTAR

The original word processing package millions use every day . . . now at close out prices!

Version 3.3

ORDER TODAY! 1+ $99.00 10+ $89.00 *LIMITED QUANTITIES!*

Verbatim DataLife

3½" SINGLE SIDED DISKS

For as low as

99¢ each*

	40+	100+
3½" SS	1.24	1.19
3½" DS	1.85	1.78
5¼" DS/DD	1.11	1.07

*With manufacturer's rebate, as outlined below.

MANUFACTURER'S COUPON

It's easy. Buy your Verbatim DataLife 10-pack(s), and send us this coupon with your proofs of purchase and receipt(s). Please, only one redemption per name and address.

☐ Please send me the DataLife 10-pack I've indicated below. I have enclosed my fully completed coupon, three (3) UPC symbols and dated cash register receipt(s) with purchase price(s) circled.

Select one only:
☐ 5¼" Single Sided/Double Density
☐ 5¼" Double Sided/Double Density
☐ 3½" Single Sided/Double Density
☐ 3½" Double Sided/Double Density

☐ Please send my $12 Cash Rebate Check. I have enclosed my fully completed coupon, two (2) UPC symbols, and dated cash register receipt(s) with purchase price(s) circled.

☐ Please send my $5 Cash Rebate Check. I have enclosed my fully completed coupon, one (1) UPC symbol, and dated cash register receipt with price circled.

Name _____

Address _____

City _____

State _____ Zip _____

Send completed coupon and proofs of purchase to: Verbatim 1-2-3 FREE Offer, P.O. Box 8966, Clinton, Iowa 52736. Limit one choice per name and address. Offer void if correct and valid proofs of purchase and complete return name and address are not included. Mechanical reproductions of this coupon or UPC symbols will not be honored. Offer rights not assignable or transferable. Allow eight (8) weeks for delivery. Void where taxed, prohibited or otherwise restricted by law. Requests must be received no later than November 1, 1986.

Nashua™

- Boxed in tens
- Write protect tabs and labels
- 100% certified

	50+	100+
3½" SS	1.26	1.20
3½" DS	1.89	1.84
5¼" SS/DD	.64	.61
5¼" DS/DD	.69	.65
5¼" HD	1.89	1.85

Packaged in poly-bags of 50, sold in increments of 250.
- Labels, write protects and envelopes

5¼" DS/DD

45¢ each (500+) **49¢** each (250+)

5¼" SS/DD

41¢ each (500+) **45¢** each (250+)

VERIFLEX

5¼" DS/DD BULK

As low as

35¢

- Envelopes, labels and write protects

35¢ each, Qty. 1000
37¢ each, Qty. 500
39¢ each, Qty. 100

- Packaged in tens in plastic library case
- Tyvek envelopes
- Lifetime warranty

	50+	100+
5¼" SS/DD	66¢	63¢
5¼" DS/DD	69¢	64¢

ITT DOS

VERSION 2.11 **$50.00**

USA-FLEX

135 N. Brandon Dr.
Glendale Heights,
IL 60139

Shipping/handling additional. Minimum order $50.00. Visa, MasterCard and Prepaid orders accepted. Corporations rated 3A2 or better and government accounts are accepted on a net 30 basis. C.O.D. orders add an additional $5.00 special handling charge. APO, FPO, AK, HI, & PR orders add an additional 5% to the total order amount to cover PAL and insurance. No sales tax outside of Illinois. Outside USA add 20%.

PAGE 2

CALL TODAY TOLL FREE!

1 800 USA-FLEX

(1 800 872-3539)
7 to 7 Central Time • 10 to 3 Saturdays

IN ILLINOIS 1 800 FOR-FLEX
(1 800 367-3539)

USA FLEX

SURGE SUPPRESSORS

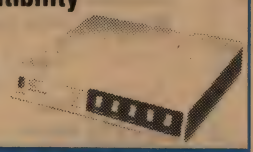
Get the best protection for your investment:
- Normal and common mode suppression
- Low let-through voltage

6 outlet $9.89

POWER CENTER

Get upfront, individual switching for up to five devices.
- Failsafe auto shut-off
- Built-in circuit breaker
- Total compatibility

$49.95



COPY II PC OPTION BOARD

By: Central Point Software
The best way to make archival backups of protected software!

$83.00

- Add-in board
- Gives you same capabilities as most disk duplication firms
- Includes track editor
- Uses one full size slot

3M DATA CARTRIDGES

DC300XL	$18.39	DC300XLP	$18.69
DC600A	$20.69		
DC2000	$16.69	DC600XTD	$22.00
DC300A	$15.45	DC615HC	$17.19
DC600HC	$23.29	DC615A	$15.89
DC1000	$12.19	DC100A	$11.79

NEW DECADE II

20 Megabyte cassettes for Genoa and Memtek tape back-up systems.

$9.95 Quantity discounts available!

Data Devices Cartridge Cleaner

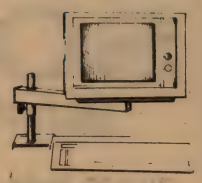
- Tape speed is 90 ips
- Newly designed drive system provides optimum testing and trouble-free operation
- Simple operation requiring only insertion of cartridge for cleaning

$995.00

SPACESAVER 2 MONITOR ARM

Mounted adjustable arm for monitor
Retails for $89.00

$69.99



CRT & TERMINAL VALET

Wall, desk or flange mount
Retails for $99.95 $88.00

eldon® COPY HOLDER

Holds copy with see-through line guide
Retails for $19.08 $11.98

KEYBOARDS

- FCC approved
- Made in USA
- Illuminated caps
- AT/XT switchable
- SCROLL locks

$59.99

RSi TOTAL CARE SYSTEM

CONTAINS: Swabs, Wipes, Head Cleaning Kit, Antistatic Spray, Screen Terminal Cleaner

For 3½" ..... $12.95 For 5¼" $9.95

HEAD CLEANING KITS

For 3½" ..... $7.95 For 5¼" $5.95

COMPUTER TAPE

DESCRIPTION	3M Black Watch 50+ reels	MEMOREX MRX V 10+ reels	MEMOREX MRX V 50+ reels	DECADE 20 year warranty Certified for use at 6250 BPI 10+ reels	DECADE 20 year warranty Certified for use at 6250 BPI 50+ reels
1200' w/seal	10.29	10.45	9.95	8.85	7.95
600' w/seal	7.79	7.95	7.25	6.95	6.25
200' w/seal	FREE FREIGHT on orders of 50+ reels of Decade tape			5.95	5.25
200' w/mailer				5.25	4.75

ROLLTOPS

GENUINE TEAK

Get real wood for the price of most plastic files!

Holds 50 3½" disks $17.49
Holds 50 5¼" disks $24.99
Holds 100 5¼" disks $32.99

THE ORIGINAL**

Classic design holds 50 3½" disks or 120 5¼" with dividers and labels

3½" model $17.49
5¼" model $24.99

**Buff and oak finish

PC Parts

RS232 Serial Card	$38.99
RS232 Serial Card with Clock	$67.99
V-20 chip	$13.95
512K RAM card with OK	$69.00
Floppy drive controller	$44.95
XT type slide case	$59.00
180 watt power supply	$89.00

CHIPS

64K 150NS	$ .79
256K 150NS	$2.59

CABLES COMPARE PRICES!

6' DB 25-pin male to 36-pin Centronics male D adapts IBM & compatibles to Centronics parallel printer $11.95

9' DB 25-pin male to 36-pin Centronics male D adapts IBM & compatibles to Centronics parallel printer $14.95

6' Centronics male to Centronics male D for computer to printer $14.95

6' RS-232 DB 25-pin male to DB 25-pin female For use with IBM & compatible printers $10.95

FLIP SORTS

Innovative Concepts, Inc.

Dust-free, smoked acrylic protection and easy retrieval for diskettes

Holds 60 3½" disks $5.95
Holds 70 5¼" disks $5.95

135 N. Brandon Dr.
Glendale Heights,
IL 60139

Shipping/handling additional. Minimum order $50.00. Visa, MasterCard and Prepaid orders accepted. Corporations rated 3A2 or better and government accounts are accepted on a net 30 basis. C.O.D. orders add an additional $5.00 special handling charge. APO, FPO, AK, HI, & PR orders add an additional 5% to the total order amount to cover PAL and insurance. No sales tax outside of Illinois. Outside USA add 20%.

CALL TODAY TOLL FREE!

1 800 USA-FLEX

(1 800 872-3539)

7 to 7 Central Time • 10 to 3 Saturdays

IN ILLINOIS 1 800 FOR-FLEX (1 800 367-3539)

PAGE 3

RIBBONS*

We stock a complete line of ribbons for printers and typewriters. If you don't see the exact ribbon you need on this page, call and one of our Flex Operators will gladly find it for you!

Apple Imagewriter 2.35

COLOR SIX-PACKS 3.05

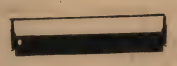
(one each red, green, brown, purple, blue, yellow)

C. Itoh Prowriter 2.99

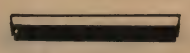
Data Products B-300 5.59

Diablo Hytype II $2.89

Epson LQ1500 2.99



Epson MX80 2.10



Epson MX100 2.95

Hewlett Packard 2608 15.99

IBM Proprinter 3.20

NEC Spinwriter 5.29

Okidata 80/82/83/92 .85

Okidata 84/94 2.20

Okidata 182/192 3.95

*Sold in lots of six

DOT MATRIX PRINTERS

100% EPSON

COMPATIBLE

By RITEMAN

Low Profile

WIDE-CARRIAGE

- 160 CPS correspondence 32 CPS NLQ
- 132 column
- Tractor feed standard
- All Epson escape codes
- All IBM characters
- 8K buffer–for graphhic capabilities

$399.00

PORTABLE

- 120 CPS correspondence
- 80 column
- All Epson escape codes
- All IBM characters
- Pin-feed standard

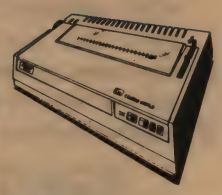
$169.00

Letter Quality

ADEUS CP2000

Printer..... $289.00

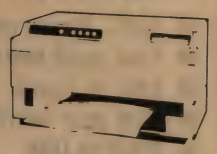
- Memory of 2KB (Expandable to 6KB)
- Fast and Quiet (22 CPS at 58 dB)
- Diabolo 630 WP sequence
- Parallel and serial ports
- Sheet and tractor feed available



FREE SHIPPING!

Canon LASER PRINTERS

- SUPER FAST
- SUPER QUIET
- SUPER SMALL



SUPER PRICE $1949.00

HEWLETT PACKARD

LASER JET

$2295.00

- Includes toner cartridge
- Parallel and serial interface included

Laserjet Plus $3995.00
Laserjet 500 Plus $4995.00
Ideassociates 5251 Emulation Board with purchase of any HP Laserjet.... $499.00

LASER PRINTER SUPPLIES

Font Cartridges
From 7.5 to 16 point ... From $199.00 ea.

Toner Cartridges
For Canon and Hewlett Packard $89.49 ea.

CURTIS

Printer Stand

Held at a slight pitch to improve line of sight, this stand also reduces neck and eye strain.

Retail: $19.99 $17.99

PRINTER STAND

NEW

eldon®

Accommodates rear-feed dot matrix printers up to 100 lbs. Exclusive modular design saves space, increases organization and improves efficiency.

$19.99

STACKABLE LETTER TRAY

For use with printer stand, available in 8 colors. Retails for $7.98. $6.99

USA-FLEX

135 N. Brandon Dr.
Glendale Heights,
IL 60139

Shipping/handling additional. Minimum order $50.00. Visa, MasterCard and Prepaid orders accepted. Corporations rated 3A2 or better and government accounts are accepted on a net 30 basis. C.O.D. orders add an additional $5.00 special handling charge. APO, FPO, AK, HI, & PR orders add an additional 5% to the total order amount to cover PAL and insurance. No sales tax outside of Illinois. Outside USA add 20%.

PAGE 4

CALL TODAY TOLL FREE!

1 800 USA-FLEX

(1 800 872-3539)
7 to 7 Central Time • 10 to 3 Saturdays

IN ILLINOIS 1 800 FOR-FLEX
(1 800 367-3539)

USA FLEX

135 N. Brandon Dr.
Glendale Heights,
IL 60139

Shipping/handling additional. Minimum order $50.00. Visa, MasterCard and Prepaid orders accepted. Corporations rated 3A2 or better and government accounts are accepted on a net 30 basis. C.O.D. orders add an additional $5.00 special handling charge. APO, FPO, AK, HI, & PR orders add an additional 5% to the total order amount to cover PAL and insurance. No sales tax outside of Illinois. Outside USA add 20%.

"smalltalk"™

SHORT CARD MODEM

- 100% Hayes compatible
- True short slot modem
- Easy to install
- Five year warranty
- Made in USA
- Single keystroke commands throughout
- 18 number dialing table
- Autodial to Dow Jones and The Source
- With Quicklink software

1200/300 BPS $105.00
2400/1200/300 BPS $279.00

"desktalk"

EXTERNAL MODEM

- Fully Hayes compatible
- With Quicklink Software

1200/300 BPS $139.00
2400/1200/300 BPS $279.00

INCOMM TURBO

EXTERNAL MODEM

- 100% Hayes compatible

2400/1200/300 BPS
$389.00

ZUCKERBOARD

COLOR GRAPHICS CARD

- Parallel printer port
- Two year warranty
- Made in USA

$85.00

THESYS

Fastcard III Extended Memory Card

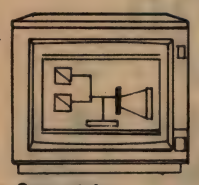
$149.95 w/OK

Features:

- Split memory mapping
- Automatic memory allocation
- Built-in diagnostics
- Custom password security

SAMSUNG MONITORS

NEW TECHNOLOGY BRILLIANT GRAPHICS EGA MONITOR



- 14" Dual-Frequency
- CGA/EGA
- Resolution 640 × 350
- Dot Pitch .31mm
- 16/64 Colors

COMPARE!!

Separately $450.00

EGA Brand Name Enhanced Graphics Card

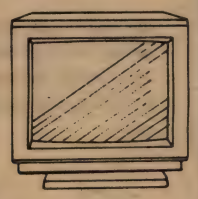
- Made in USA
- Supports 256K
- Parallel printer port
- 1 year warranty
- Software switchable from IBM, EGA, mono and color

Separately $279.00

SPECIAL BOTH FOR $699.00

NEW!

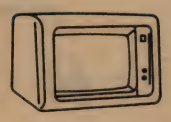
With Tilt'n Swivel!!



$84.00

- 12" monochrome TTL
- High resolution
- Complete with tilt and swivel
- Amber monitor

SAMSUNG



- 12" screen
- High resolution (800 lines at center)
- Composite video signal input
- Amber or green

$69.00 1+ $64.00 3+ $59.00 5+

intel Above Board P.S.

- 64K
- Expandable to 1.5 meg.
- Parallel/serial/clock

$299.00*

ORDER TODAY!

*BONUS

Intel will send you:

1. 8087 Math Coprocessor Retail Value: $175.00
2. Microsoft Windows Retail Value: $99.00

$40.00 rebate certificate if upgrading from Lotus 1a to 2.0

Seagate 20 MEG HARD DRIVE

Highest quality available

- The only PC hard disk that comes complete with cables, software, controller, mounting hardware and full and ½ height bezels in one box
- Fully tested and warranteed for one year. Made in USA
- Includes Controller Card

$389.00

10 to 20 MEG AVAILABLE - CALL!

TEAC DRIVES

$89.00

55F BV 360K Call for quantity discounts!

Floppy drive controller $44.95

KENSINGTON™ MICROWARE

PORTABLE MODEM

Only $69.00

- For Macintosh and Apple IIe
- 300 baud
- Connects directly to the wall telephone jack
- Battery powered
- Weight 12 oz.
- Full/Half duplex select switch

MEMTEC

20 Meg Internal Tape Back-Up

Compact ..... Low Cost
Includes software, cables, controller card, drive and one data cassette.

$459.00

THE LATEST IN PC ENHANCEMENT PRODUCTS

ENHANCED GRAPHICS ADAPTOR

100% IBM COMPATIBLE—PASSES IBM EGA DIAGNOSTICS

- ★ COMPATIBLE WITH IBM EGA, COLOR GRAPHICS ADAPTOR AND MONOCHROME ADAPTOR
- ★ DISPLAYS 16 COLORS OUT OF 64 COLORS
- ★ COMES WITH 256K OF VIDEO RAM
- ★ DUAL SCANNING FREQUENCIES WORKS WITH STANDARD OR EGA TYPE RGB MONITORS
- ★ LIGHT PEN INTERFACE

NOW ONLY **$259.95**

EGA MONITOR

FULL ONE YEAR WARRANTY

- ★ EGA AND CGA COMPATIBLE
- ★ SCANNING FREQUENCIES: 15.75 KHz / 21.85 KHz
- ★ 14" BLACK MATRIX, NON-GLARE SCREEN
- ★ RESOLUTION: 640 x 200 / 640 x 350
- ★ .31 DOT, 25MHz
- ★ 16 COLORS OUT OF 64
- ★ TEXT SWITCH-GREEN/AMBER

$499.95

BUY BOTH **$699!**

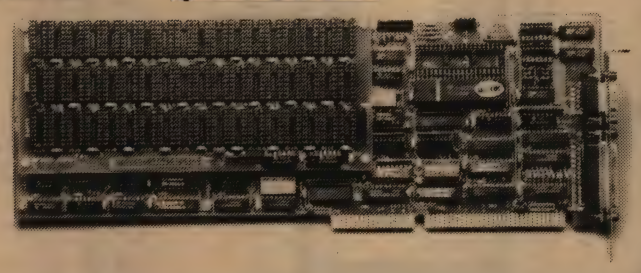
20 MB HARD DISK SYSTEM

INCLUDES HARD DISK CONTROLLER, CABLES AND INSTRUCTIONS. ALL DRIVES ARE PRE-TESTED AND COME WITH A 1 YEAR WARRANTY.

$389.95

AT MULTIFUNCTION CARD $199.95

ADDS UP TO 3 MEGABYTES OF USER EXPANDABLE MEMORY

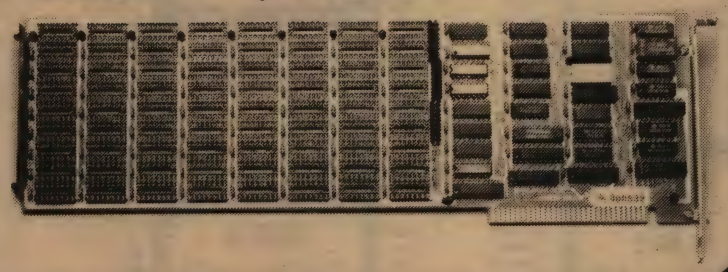


- ★ SHIPPED WITH ZERO K RAM, USER EXPANDABLE TO 1.5 MEGABYTES RAM ON BOARD, UP TO 3 MEGABYTES WITH OPTIONAL PIGGYBACK CARD
- ★ USES 64K OR 256K DYNAMIC RAMS
- ★ PARALLEL PORT & GAME PORT
- ★ SERIAL PORT
- ★ OPTIONAL SECOND SERIAL PORT

PIGGYBACK MEMORY CARD (NO MEMORY INSTALLED) **$49.95**

EXPANDED MEMORY CARD $199.95

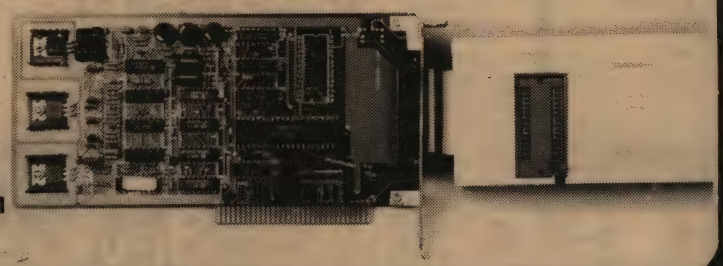
UP TO 2 MEGABYTES OF LOTUS/INTEL COMPATIBLE MEMORY



- ★ CONFORMS TO LOTUS/INTEL EXPANDED MEMORY SPECIFICATIONS (EMS)
- ★ SHIPPED WITH ZERO K RAM, USER EXPANDABLE TO 2 MEGABYTES
- ★ USES 64K OR 256K DYNAMIC RAMS
- ★ USE AS EXPANDED (EMS) OR CONVENTIONAL MEMORY, RAMDISK OR SPOOLER
- ★ SOFTWARE INCLUDES EMS DEVICE DRIVERS, PRINT SPOOLER AND RAMDISK

EPROM PROGRAMMER $129.95

FOR IBM PC/XT/AT AND COMPATIBLES



- ★ PROGRAMS 27xxx SERIES EPROMS UP TO 27512
- ★ MENU DRIVEN SOFTWARE PROVIDED ON DISKETTE
- ★ AUTOMATICALLY SETS PROGRAMMING VOLTAGE
- ★ LOADS AND SAVES EPROM BUFFER TO DISK
- ★ READ, WRITE, COPY, VERIFY OR CHECK BLANK
- ★ DEBUG STYLE EDITOR FOR EASY MODIFICATION OF PROGRAM
- ★ SPLITS OR COMBINES EPROMS OF DIFFERING SIZES
- ★ INTERNAL CARD WITH EXTERNAL CABLE FOR A ZIF SOCKET

JDR Microdevices 1224 S. Bascom Avenue, San Jose, CA 95128
Toll Free 800-538-5000 • (408) 995-5430 • FAX (408) 275-8415 • Telex 171-110

© COPYRIGHT 1986 JDR MICRODEVICES
THE JDR MICRODEVICES LOGO IS A REGISTERED TRADEMARK OF JDR MICRODEVICES. JDR INSTRUMENTS AND JDR MICRODEVICES ARE TRADEMARKS OF JDR MICRODEVICES.
IBM IS A TRADEMARK OF INTERNATIONAL BUSINESS MACHINES.

20MB HARD DISK SYSTEM ONLY $389.95!

STATIC RAMS

2101	256x4	(450ns)	1.95
5101	256x4	(450ns)(CMOS)	3.95
2102L-4	1024x1	(450ns)(LP)	.99
2112	256x4	(450ns)	2.99
2114	1024x4	(450ns)	.99
2114L-4	1024x4	(450ns)(LP)	1.09
2114L-2	1024x4	(200ns)(LP)	1.49
2114L-15	1024x4	(150ns)(LP)	1.95
TMS4044-4	4096x1	(450ns)	1.95
TMM2016-150	2048x8	(150ns)	1.49
TMM2016-100	2048x8	(100ns)	1.95
HM6116-4	2048x8	(200ns)(CMOS)	1.89
HM6116-3	2048x8	(150ns)(CMOS)	1.95
HM6116LP-4	2048x8	(200ns)(CMOS)(LP)	1.95
HM6116LP-3	2048x8	(150ns)(CMOS)(LP)	2.05
HM6116LP-2	2048x8	(120ns)(CMOS)(LP)	2.95
HM6264P-15	8192x8	(150ns)(CMOS)	3.89
HM6264LP-15	8192x8	(150ns)(CMOS)(LP)	3.95
HM6264LP-12	8192x8	(120ns)(CMOS)(LP)	4.49

LP=Low power

DYNAMIC RAMS

4116-250	16384x1	(250ns)	.49
4116-200	16384x1	(200ns)	.89
4116-150	16384x1	(150ns)	.99
4116-120	16384x1	(120ns)	1.49
MK4332	32768x1	(200ns)	6.95
4164-200	65536x1	(200ns)(5v)	1.19
4164-150	65536x1	(150ns)(5v)	1.29
4164-120	65536x1	(120ns)(5v)	1.95
MCM6665	65536x1	(200ns)(5v)	1.95
TMS4164	65536x1	(150ns)(5v)	1.95
4164-REFRESH	65536x1	(150ns)(5V)(REFRESH)	2.95
TMS4416	16384x4	(150ns)(5v)	4.95
41128-150	131072x1	(150ns)(5v)	5.95
TMS4464-15	65536x4	(150ns)(5v)	6.95
41256-200	262144x1	(200ns)(5v)	2.95
41256-150	262144x1	(150ns)(5v)	2.95

5v=Single 5 Volt Supply REFRESH=Pin 1 Refresh

★★★★HIGH-TECH★★★★

NEC V20 UPD70108 $11.95

REPLACES 8088 TO SPEED UP IBM PC 10-40%

- HIGH-SPEED ADDRESS CALCULATION IN HARDWARE
- PIN COMPATIBLE WITH 8088
- SUPERSET OF 8088 INSTRUCTION SET
- LOW POWER CMOS

8MHz	V20	UPD70108-8	$13.95
8MHz	V30	UPD70116-8	$19.95

★★★★SPOTLIGHT★★★★

EPROMS

2708	1024x8	(450ns)	4.95
2716	2048x8	(450ns)(5V)	3.49
2716-1	2048x8	(350ns)(5V)	3.95
TMS2532	4096x8	(450ns)(5V)	5.95
2732	4096x8	(450ns)(5V)	3.95
2732A	4096x8	(250ns)(5V)(21V PGM)	3.95
2732A-2	4096x8	(200ns)(5V)(21V PGM)	4.25
27C64	8192x8	(250ns)(5V)(CMOS)	5.95
2764	8192x8	(450ns)(5V)	3.49
2764-250	8192x8	(250ns)(5V)	3.95
2764-200	8192x8	(200ns)(5V)	4.25
MCM68766	8192x8	(350ns)(5V)(24 PIN)	17.95
27128	16384x8	(250ns)(5V)	4.25
27C256	32768x8	(250ns)(5V)(CMOS)	10.95
27256	32768x8	(250ns)(5V)	7.49

5V=Single 5 Volt Supply 21V PGM=Program at 21 Volts

ORDER TOLL FREE 800-538-5000

VISA MasterCard

SPECTRONICS CORPORATION EPROM ERASERS

Model	Timer	Capacity Chip	Intensity (uW/Cm²)	Unit Price
PE-14	NO	9	8,000	$83.00
PE-14T	YES	9	8,000	$119.00
PE-24T	YES	12	9,600	$175.00

8000

8035	1.49
8039	1.95
8080	2.95
8085	2.49
8087-2	169.95
8087	129.00
8088	6.95
8088-2	9.95
8155	2.49
8155-2	3.95
8748	7.95
8755	14.95
80286	129.95
80287	199.95

8200

8203	24.95
8205	3.29
8212	1.49
8216	1.49
8224	2.25
8237	4.95
8237-5	5.49
8250	6.95
8251	1.69
8251A	1.89
8253	1.89
8253-5	1.95
8255	1.69
8255-5	1.89
8259	1.95
8259-5	2.29
8272	4.95
8279	2.49
8279-5	2.95
8282	3.95
8284	2.95
8286	3.95
8288	4.95

Z-80

Z80-CPU 2.5 MHz 1.69

4.0 MHz

Z80A-CPU	1.79
Z80A-CTC	1.89
Z80A-DART	5.95
Z80A-DMA	5.95
Z80A-PIO	1.89
Z80A-SIO/0	5.95
Z80A-SIO/1	5.95
Z80A-SIO/2	5.95

6.0 MHz

Z80B-CPU	3.75
Z80B-CTC	4.25
Z80B-PIO	4.25
Z80B-DART	14.95
Z80B-SIO/0	12.95
Z80B-SIO/2	12.95
Z8671 ZILOG	19.95

6500

1.0 MHz

6502	2.69
65C02 (CMOS)	12.95
6507	9.95
6520	1.95
6522	4.95
6526	26.95
6532	6.95
6545	6.95
6551	5.95
6561	19.95
6581	34.95

2.0 MHz

6502A	2.95
6520A	2.95
6522A	5.95
6532A	11.95
6545A	7.95
6551A	6.95

3.0 MHz

6502B	6.95

6800

1.0 MHz

6800	1.95
6802	4.95
6803	9.95
6809	5.95
6809E	5.95
6810	1.95
6820	2.95
6821	1.95
6840	6.95
6843	19.95
6844	12.95
6845	4.95
6847	11.95
6850	1.95
6883	22.95

2.0 MHz

68B00	4.95
68B02	5.95
68B09E	6.95
68B09	6.95
68B21	3.95
68B45	6.95
68B50	2.95
68B54	7.95

CLOCK CIRCUITS

MM5369	1.95
MM5369-EST	1.95
MM58167	12.95
MM58174	11.95
MSM5832	2.95

CRT CONTROLLERS

6845	4.95
68B45	8.95
6847	11.95
HD46505SP	6.95
MC1372	2.95
8275	26.95
7220	19.95
CRT5027	12.95
CRT5037	9.95
TMS9918A	19.95

DISK CONTROLLERS

1771	4.95
1791	9.95
1793	9.95
1795	12.95
1797	12.95
2791	19.95
2793	19.95
2797	29.95
6843	19.95
8272	4.95
UPD765	4.95
MB8876	12.95
MB8877	12.95
1691	6.95
2143	6.95

BIT RATE GENERATORS

MC14411	9.95
BR1941	4.95
4702	9.95
COM8116	8.95
MM5307	4.95

UARTS

AY5-1013	3.95
AY3-1015	4.95
TR1602	3.95
2651	4.95
IM6402	6.95
IM6403	9.95
INS8250	6.95

SOUND CHIPS

76477	5.95
76489	8.95
SSI-263	39.95
AY3-8910	12.95
AY3-8912	12.95
SP1000	39.00

CRYSTALS

32.768 KHz	.95
1.0 MHz	2.95
1.8432	2.95
2.0	1.95
2.097152	1.95
2.4576	1.95
3.2768	1.95
3.579545	1.95
4.0	1.95
4.032	1.95
5.0	1.95
5.0688	1.95
6.0	1.95
6.144	1.95
6.5536	1.95
8.0	1.95
10.0	1.95
10.738635	1.95
12.0	1.95
14.31818	1.95
15.0	1.95
16.0	1.95
17.430	1.95
18.0	1.95
18.432	1.95
20.0	1.95
22.1184	1.95
24.0	1.95
32.0	1.95

CRYSTAL OSCILLATORS

1.0MHz	5.95
1.8432	5.95
2.0	5.95
2.4576	5.95
2.5	4.95
4.0	4.95
5.0688	4.95
6.0	4.95
6.144	4.95
8.0	4.95
10.0	4.95
12.0	4.95
12.480	4.95
15.0	4.95
16.0	4.95
18.432	4.95
20.0	4.95
24.0	4.95

MISC.

TMS99531	9.95
TMS99532	19.95
ULN2003	.79
3242	7.95
3341	4.95
MC3470	1.95
MC3480	8.95
MC3487	2.95
11C90	19.95
2513-001 UP	6.95
AY5-2376	11.95
AY5-3600 PRO	11.95

74LS00

74LS00	.16	74LS165	.65
74LS01	.18	74LS166	.95
74LS02	.17	74LS169	.95
74LS03	.18	74LS173	.49
74LS04	.16	74LS174	.39
74LS05	.18	74LS175	.39
74LS08	.18	74LS191	.49
74LS09	.18	74LS192	.69
74LS10	.16	74LS193	.69
74LS11	.22	74LS194	.69
74LS12	.22	74LS195	.69
74LS13	.26	74LS196	.59
74LS14	.39	74LS197	.59
74LS15	.26	74LS221	.59
74LS20	.17	74LS240	.69
74LS21	.22	74LS241	.69
74LS22	.22	74LS242	.69
74LS27	.23	74LS243	.69
74LS28	.26	74LS244	.69
74LS30	.17	74LS245	.79
74LS32	.18	74LS251	.49
74LS33	.28	74LS253	.49
74LS37	.26	74LS256	1.79
74LS38	.26	74LS257	.39
74LS42	.39	74LS258	.49
74LS47	.75	74LS259	1.29
74LS48	.85	74LS260	.49
74LS51	.17	74LS266	.39
74LS73	.29	74LS273	.79
74LS74	.24	74LS279	.39
74LS75	.29	74LS280	1.98
74LS76	.29	74LS283	.59
74LS83	.49	74LS290	.89
74LS85	.49	74LS293	.89
74LS86	.22	74LS299	1.49
74LS90	.39	74LS322	3.95
74LS92	.49	74LS323	2.49
74LS93	.39	74LS364	1.95
74LS95	.49	74LS365	.39
74LS107	.34	74LS367	.39
74LS109	.36	74LS368	.39
74LS112	.29	74LS373	.79
74LS122	.45	74LS374	.79
74LS123	.49	74LS375	.95
74LS124	2.75	74LS377	.79
74LS125	.39	74LS378	1.18
74LS126	.39	74LS390	1.19
74LS132	.39	74LS393	.79
74LS133	.49	74LS541	1.49
74LS136	.39	74LS624	1.95
74LS138	.39	74LS640	.99
74LS139	.39	74LS645	.99
74LS145	.99	74LS669	1.29
74LS147	.99	74LS670	.89
74LS148	.99	74LS682	3.20
74LS151	.39	74LS683	3.20
74LS153	.39	74LS684	3.20
74LS154	1.49	74LS688	2.40
74LS155	.59	74LS783	22.95
74LS156	.49	81LS95	1.49
74LS157	.35	81LS96	1.49
74LS158	.29	81LS97	1.49
74LS160	.29	81LS98	1.49
74LS161	.39	25LS2521	2.80
74LS162	.49	25LS2569	2.80
74LS163	.39	26LS31	1.95
74LS164	.49	26LS32	1.95

HIGH SPEED CMOS

A new family of high speed CMOS logic featuring the speed of low power Schottky (8ns typical gate propagation delay), combined with the advantages of CMOS: very low power consumption, superior noise immunity, and improved output drive.

74HC00

74HC: Operate at CMOS logic levels and are ideal for new, all-CMOS designs.

74HC00	.59	74HC148	1.19
74HC02	.59	74HC151	.89
74HC04	.59	74HC154	2.49
74HC08	.59	74HC157	.89
74HC10	.59	74HC158	.95
74HC14	.79	74HC163	1.15
74HC20	.59	74HC175	.99
74HC27	.59	74HC240	1.89
74HC30	.59	74HC244	1.89
74HC32	.69	74HC245	1.89
74HC51	.59	74HC257	.85
74HC74	.75	74HC259	1.39
74HC85	1.35	74HC273	1.89
74HC86	.69	74HC299	4.99
74HC93	1.19	74HC368	.99
74HC107	.79	74HC373	2.29
74HC109	.79	74HC374	2.29
74HC112	.79	74HC390	1.39
74HC125	1.19	74HC393	1.39
74HC132	1.19	74HC4017	1.99
74HC133	.69	74HC4020	1.39
74HC138	.99	74HC4049	.89
74HC139	.99	74HC4050	.89

74HCT00

74HCT: Direct, drop-in replacements for LS TTL and can be intermixed with 74LS in the same circuit.

74HCT00	.69	74HCT166	3.05
74HCT02	.69	74HCT174	1.09
74HCT04	.69	74HCT193	1.39
74HCT08	.69	74HCT194	1.19
74HCT10	.69	74HCT240	2.19
74HCT11	.69	74HCT241	2.19
74HCT27	.69	74HCT244	2.19
74HCT30	.69	74HCT245	2.19
74HCT32	.79	74HCT257	.99
74HCT74	.85	74HCT259	1.59
74HCT75	.95	74HCT273	2.09
74HCT138	1.15	74HCT367	1.09
74HCT139	1.15	74HCT373	2.49
74HCT154	2.99	74HCT374	2.49
74HCT157	.99	74HCT393	1.59
74HCT158	.99	74HCT4017	2.19
74HCT161	1.29	74HCT4040	1.59
74HCT164	1.39	74HCT4060	1.49

74F00

74F00	.69	74F74	.79	74F251	1.69
74F02	.69	74F86	.99	74F253	1.69
74F04	.79	74F138	1.69	74F257	1.69
74F08	.69	74F139	1.69	74F280	1.79
74F10	.69	74F157	1.69	74F283	3.95
74F32	.69	74F240	3.29	74F373	4.29
74F64	.89	74F244	3.29	74F374	4.29

VISIT OUR RETAIL STORE LOCATED AT 1256 SOUTH BASCOM AVENUE IN SAN JOSE

HOURS: M-W-F, 9-6 TU-TH, 9-9 SAT, 9-5

JDR Microdevices

1224 S. Bascom Avenue, San Jose, CA 95128
Toll Free 800-538-5000 • (408) 995-5430
FAX (408) 275-8415 • Telex 171-110

PLEASE USE YOUR CUSTOMER NUMBER WHEN ORDERING

TERMS: Minimum order $10.00. For shipping and handling include $2.50 for UPS Ground and $3.50 for UPS Air. Orders over 1 lb. and foreign orders may require additional shipping charges - please contact our sales department for the amount. CA residents must include applicable sales tax. All merchandise is warranted for 90 days unless otherwise stated. Prices are subject to change without notice. We are not responsible for typographical errors. We reserve the right to limit quantities and to substitute manufacturer. All merchandise subject to prior sale.

© COPYRIGHT 1986 JDR MICRODEVICES

THE JDR MICRODEVICES LOGO IS A REGISTERED TRADEMARK OF JDR MICRODEVICES. JDR INSTRUMENTS AND JDR MICRODEVICES ARE TRADEMARKS OF JDR MICRODEVICES. IBM IS A TRADEMARK OF INTERNATIONAL BUSINESS MACHINES. APPLE IS A TRADEMARK OF APPLE COMPUTER.

20MB HARD DISK SYSTEM ONLY $389.95!

CMOS

4001	.19	14419	4.95
4011	.19	14433	14.95
4012	.25	4503	.49
4013	.35	4511	.69
4015	.29	4516	.79
4016	.29	4518	.85
4017	.49	4522	.79
4018	.69	4526	.79
4020	.59	4527	1.95
4021	.69	4528	.79
4024	.49	4529	2.95
4025	.25	4532	1.95
4027	.39	4538	.95
4028	.65	4541	1.29
4035	.69	4553	5.79
4040	.69	4585	.75
4041	.75	4702	12.95
4042	.59	74C00	.29
4043	.85	74C14	.59
4044	.69	74C74	.59
4045	1.98	74C83	1.95
4046	.69	74C85	1.49
4047	.69	74C95	.99
4049	.29	74C150	5.75
4050	.29	74C151	2.25
4051	.69	74C161	.99
4052	.69	74C163	.99
4053	.69	74C164	1.39
4056	2.19	74C192	1.49
4060	.69	74C193	1.49
4066	.29	74C221	2.49
4069	.19	74C240	1.89
4076	.59	74C244	1.89
4077	.29	74C374	1.99
4081	.22	74C905	10.95
4085	.79	74C911	8.95
4086	.89	74C917	12.95
4093	.49	74C922	4.49
4094	2.49	74C923	4.95
14411	9.95	74C926	7.95
14412	6.95	80C97	.95

7400/9000

7400	.19	74147	2.49
7402	.19	74148	1.20
7404	.19	74150	1.35
7406	.29	74151	.55
7407	.29	74153	.55
7408	.24	74154	1.49
7410	.19	74155	.75
7411	.25	74157	.55
7414	.49	74159	1.65
7416	.25	74161	.69
7417	.25	74163	.69
7420	.19	74164	.85
7423	.29	74165	.85
7430	.19	74166	1.00
7432	.29	74175	.89
7438	.29	74177	.75
7442	.49	74178	1.15
7445	.69	74181	2.25
7447	.89	74182	.75
7470	.35	74184	2.00
7473	.34	74191	1.15
7474	.33	74192	.79
7475	.45	74194	.85
7476	.35	74196	.79
7483	.50	74197	.75
7485	.59	74199	1.35
7486	.35	74221	1.35
7489	2.15	74246	1.35
7490	.39	74247	1.25
7492	.50	74248	1.85
7493	.35	74249	1.95
7495	.55	74251	.75
7497	2.75	74265	1.35
74100	2.29	74273	1.95
74121	.29	74278	3.11
74123	.49	74367	.65
74125	.45	74368	.65
74141	.65	9368	3.95
74143	5.95	9602	1.50
74144	2.95	9637	2.95
74145	.60	96S02	1.95

74S00

74S00	.29	74S163	1.29
74S02	.29	74S168	3.95
74S03	.29	74S174	.79
74S04	.29	74S175	.79
74S05	.29	74S188	1.95
74S08	.35	74S189	1.95
74S10	.29	74S195	1.49
74S15	.49	74S196	2.49
74S30	.29	74S197	2.95
74S32	.35	74S226	3.99
74S37	.69	74S240	1.49
74S38	.69	74S241	1.49
74S74	.49	74S244	1.49
74S85	.95	74S257	.79
74S86	.35	74S253	.79
74S112	.50	74S258	.95
74S124	2.75	74S280	1.95
74S138	.79	74S287	1.69
74S140	.55	74S288	1.69
74S151	.79	74S299	2.95
74S153	.79	74S373	1.69
74S157	.79	74S374	1.69
74S158	.95	74S471	4.95
74S161	1.29	74S571	2.95

DATA ACQ / INTERFACE

ADC0800	15.55	8T26	1.29
ADC0804	3.49	8T28	1.29
ADC0809	4.49	8T95	.89
ADC0816	14.95	8T96	.89
ADC0817	9.95	8T97	.59
ADC0831	8.95	8T98	.89
DAC0800	4.49	DM8131	2.95
DAC0806	1.95	DP8304	2.29
DAC0808	2.95	DS8833	2.25
DAC1020	8.25	DS8835	1.99
DAC1022	5.95	DS8836	.99
MC1408L8	2.95	DS8837	1.65

VOLTAGE REGULATORS

TO-220 CASE

7805T	.49	7905T	.59
7808T	.49	7908T	.59
7812T	.49	7912T	.59
7815T	.49	7915T	.59

TO-3 CASE

7805K	1.59	7905K	1.69
7812K	1.39	7912K	1.49

TO-93 CASE

78L05	.49	79L05	.69
78L12	.49	79L12	1.49

OTHER VOLTAGE REGS

LM323K	5V 3A	TO-3	4.79
LM328K	Adj. 5A	TO-3	3.95
78H05K	5V 5A	TO-3	7.95
78H12K	12V 5A	TO-3	8.95
78P05K	5V 10A	TO-3	14.95

IC SOCKETS

	1-99	100+
8 PIN ST	.11	.10
14 PIN ST	.11	.09
16 PIN ST	.12	.10
18 PIN ST	.15	.13
20 PIN ST	.18	.15
22 PIN ST	.15	.12
24 PIN ST	.20	.15
28 PIN ST	.22	.16
40 PIN ST	.30	.22
64 PIN ST	1.95	1.49
ST=SOLDERTAIL		
8 PIN WW	.59	.69
14 PIN WW	.69	.52
16 PIN WW	.69	.58
18 PIN WW	.99	.90
20 PIN WW	1.09	.98
22 PIN WW	1.39	1.28
24 PIN WW	1.49	1.35
28 PIN WW	1.69	1.49
40 PIN WW	1.99	1.80
WW=WIREWRAP		
16 PIN ZIF	4.95	CALL
24 PIN ZIF	5.95	CALL
28 PIN ZIF	6.95	CALL
40 PIN ZIF	9.95	CALL
ZIF=TEXTOOL (ZERO INSERTION FORCE)		

LINEAR

TL066	.99	LM733	.98
TL071	.69	LM741	.29
TL072	1.09	LM747	.69
TL074	1.95	LM748	.59
TL081	.59	MC1330	1.69
TL082	.99	MC1350	1.19
TL084	1.49	MC1372	6.95
LM301	.34	LM1414	1.59
LM309K	1.25	LM1458	.49
LM311	.59	LM1488	.49
LM311H	.89	LM1489	.49
LM317K	3.49	LM1496	.85
LM317T	.95	LM1812	8.25
LM318	1.49	LM1889	1.95
LM319	1.25	ULN2003	.79
LM320	see7900	XR2206	3.95
LM322	1.95	XR2211	2.95
LM323K	4.79	XR2240	1.95
LM324	.49	MPQ2907	1.95
LM331	3.95	LM2917	1.95
LM334	1.19	CA3046	.89
LM335	1.79	CA3081	.99
LM336	1.75	CA3082	.99
LM337K	3.95	CA3086	.80
LM338K	6.95	CA3089	1.95
LM339	.59	CA3130E	.99
LM340	see7800	CA3146	1.29
LM350T	4.60	CA3160	1.19
LF353	.59	MC3470	1.95
LF356	.99	MC3480	8.95
LF357	.99	MC3487	2.95
LM358	.59	LM3900	.49
LM380	.89	LM3909	.98
LM383	1.95	LM3911	2.25
LM386	.89	LM3914	2.39
LM393	.45	MC4024	3.49
LM394H	5.95	MC4044	3.99
TL494	4.20	RC4136	1.25
TL497	3.25	RC4558	.69
NE555	.29	LM13600	1.49
NE556	.49	75107	1.49
NE558	1.29	75110	1.95
NE564	1.95	75150	1.95
LM565	.95	75154	1.95
LM566	1.49	75188	1.25
LM567	.79	75189	1.25
NE570	2.95	75451	.39
NE590	2.50	75452	.39
NE592	.98	75453	.39
LM710	.75	75477	1.29
LM723	.49	75492	.79

H=TO-5 CAN, K=TO-3, T=TO-220

EDGECARD CONNECTORS

100 PIN	ST	S-100	.125	3.95
100 PIN	WW	S-100	.125	4.95
62 PIN	ST	IBM PC	.100	1.95
50 PIN	ST	APPLE	.100	2.95
44 PIN	ST	STD	.156	1.95
44 PIN	WW	STD	.156	4.95

36 PIN CENTRONICS

MALE		
IDCEN36	RIBBON CABLE	6.95
CEN36	SOLDER CUP	4.95
FEMALE		
IDCEN36/F	RIBBON CABLE	7.95
CEN36PC	RT ANGLE PC MOUNT	4.95

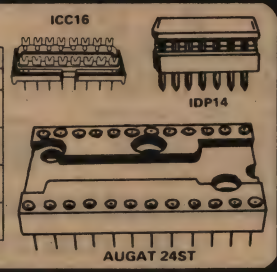
INTERSIL

ICL7106	9.95
ICL7107	12.95
ICL7660	2.95
ICL8038	4.95
ICM7207A	5.95
ICM7208	15.95

DIP CONNECTORS

DESCRIPTION	ORDER BY	CONTACTS 8	14	16	18	20	22	24	28	40
HIGH RELIABILITY TOOLED ST IC SOCKETS	AUGATxxST	.62	.79	.89	1.09	1.29	1.39	1.49	1.69	2.49
HIGH RELIABILITY TOOLED WW IC SOCKETS	AUGATxxWW	1.30	1.80	2.10	2.40	2.50	2.90	3.15	3.70	5.40
COMPONENT CARRIES (DIP HEADERS)	ICCxx	.49	.59	.69	.99	.99	.99	.99	1.09	1.49
RIBBON CABLE DIP PLUGS (IDC)	IDPxx	---	.95	.95	---	---	---	1.75	---	2.95

FOR ORDERING INSTRUCTIONS SEE D-SUBMINIATURE BELOW



DIODES/OPTO/TRANSISTORS

1N751	.25	4N26	.69
1N759	.25	4N27	.69
1N4148	25/1.00	4N28	.69
1N4004	10/1.00	4N33	.89
1N5402	.25	4N37	1.19
KBP04	.55	MCT-2	.59
KBU8A	.95	MCT-6	1.29
MDA990-2	.35	TIL-111	.99
N2222	.25	2N3906	.10
PN2222	.10	2N4401	.25
2N2905	.50	2N4402	.25
2N2907	.25	2N4403	.25
2N3055	.79	2N6045	1.75
2N3904	.10	TIP31	.49

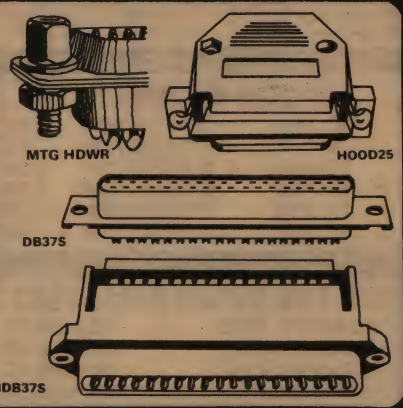
D-SUBMINIATURE

DESCRIPTION		ORDER BY	CONTACTS 9	15	19	25	37	50
SOLDER CUP	MALE	DBxxP	.82	.90	1.25	1.25	1.80	3.48
	FEMALE	DBxxS	.95	1.15	1.50	1.50	2.35	4.32
RIGHT ANGLE PC SOLDER	MALE	DBxxPR	1.20	1.49	---	1.95	2.65	---
	FEMALE	DBxxSR	1.25	1.55	---	2.00	2.79	---
WIRE WRAP	MALE	DBxxPWW	1.69	2.56	---	3.89	5.60	---
	FEMALE	DBxxSWW	2.76	4.27	---	6.84	9.95	---
IDC RIBBON CABLE	MALE	IDBxxP	2.70	2.95	---	3.98	5.70	---
	FEMALE	IDBxxS	2.92	3.20	---	4.33	6.76	---
HOODS	METAL	MHOODxx	1.25	1.25	1.30	1.30	---	---
	GREY	HOODxx	.65	.65	---	.65	.75	.95

ORDERING INSTRUCTIONS: INSERT THE NUMBER OF CONTACTS IN THE POSITION MARKED "xx" OF THE "ORDER BY" PART NUMBER LISTED.

EXAMPLE: A 15 PIN RIGHT ANGLE MALE PC SOLDER WOULD BE DB15PR.

MOUNTING HARDWARE $1.00



LED DISPLAYS

FND-357(359)	COM	CATHODE	.362"	1.25
FND-500(503)	COM	CATHODE	.5"	1.49
FND-507(510)	COM	ANODE	.5"	1.49
MAN-72	COM	ANODE	.3"	.99
MAN-74	COM	CATHODE	.3"	.99
MAN-8940	COM	CATHODE	.8"	1.99
TIL-313	COM	CATHODE	.3"	.45
HP5082-7760	COM	CATHODE	.43"	1.29
TIL-311	4x7	HEX W/LOGIC	.270"	9.95
HP5082-7340	4x7	HEX W/LOGIC	.290"	7.95

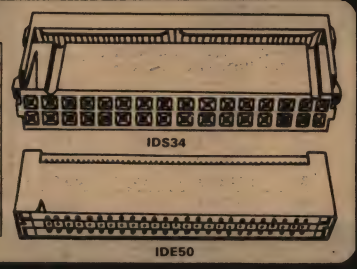
DIFFUSED LEDS

		1-99	100-UP
JUMBO RED	T1¾	.10	.09
JUMBO GREEN	T1¾	.14	.12
JUMBO YELLOW	T1¾	.14	.12
MOUNTING HDW	T1¾	.10	.09
MINI RED	T1	.10	.09

IDC CONNECTORS

DESCRIPTION	ORDER BY	CONTACTS 10	20	26	34	40	50
SOLDER HEADER	IDHxxS	.82	1.29	1.68	2.20	2.58	3.24
RIGHT ANGLE SOLDER HEADER	IDHxxSR	.85	1.35	1.76	2.31	2.72	3.39
WW HEADER	IDHxxW	1.86	2.98	3.84	4.50	5.28	6.63
RIGHT ANGLE WW HEADER	IDHxxWR	2.05	3.28	4.22	4.45	4.80	7.30
RIBBON HEADER SOCKET	IDSxx	.79	.99	1.39	1.59	1.99	2.25
RIBBON HEADER	IDMxx	---	5.50	6.25	7.00	7.50	8.50
RIBBON EDGE CARD	IDExx	1.75	2.25	2.65	2.75	3.80	3.95

FOR ORDERING INSTRUCTIONS SEE D-SUBMINIATURE ABOVE



SWITCHES

SPDT	MINI-TOGGLE ON-ON	1.25
DPDT	MINI-TOGGLE ON-ON	1.50
DPDT	MINI-TOGGLE ON-OFF-ON	1.75
SPST	MINI-PUSHBUTTON N.O.	.39
SPST	MINI-PUSHBUTTON N.C.	.39
SPST	TOGGLE ON-OFF	.49
BCD OUTPUT 10 POSITION 6 PIN DIP		1.95

DIP SWITCHES

4 POSITION	.85	7 POSITION	95
5 POSITION	.90	8 POSITION	.95
6 POSITION	.90	10 POSITION	1.29

HARD TO FIND "SNAPABLE" HEADERS

CAN BE SNAPPED APART TO MAKE ANY SIZE HEADER, ALL WITH .1" CENTERS

1x40	STRAIGHT LEAD	.99
1x40	RIGHT ANGLE	1.49
2x40	STRAIGHT LEAD	2.49
2x40	RIGHT ANGLE	2.99

SHORTING BLOCKS

GOLD CONTACTS SPACED AT .1" CENTERS

5/$1.00

Dear Mr. Rose:

I feel compelled to commend you and your people for the pleasant, polite, willingness to help and professional attitude you have displayed. In these times it is indeed refreshing to deal with a company whose staff consists of people of this caliber. My friends and associates will most certainly be doing business with you again.

Sincerely, Nicholas Chabra

RIBBON CABLE

CONTACTS	SINGLE COLOR 1'	10'	COLOR CODED 1'	10'
10	.18	1.60	.30	2.75
16	.28	2.50	.48	4.40
20	.36	3.20	.60	5.50
25	.45	4.00	.75	6.85
26	.46	4.10	.78	7.15
34	.61	5.40	1.07	9.35
40	.72	6.40	1.20	11.00
50	.89	7.50	1.50	13.25

CALL FOR VOLUME QUOTES

© COPYRIGHT 1986 JDR MICRODEVICES

20MB HARD DISK SYSTEM ONLY $389.95!

BARGAIN HUNTERS CORNER

ATTENTION PC USERS!

10 MB HARD DISK SYSTEM $349

- ★ SHOCK MOUNTED FOR 80 Gs— IDEAL FOR PORTABLES!
- ★ MMI MODEL MM212, ½ HEIGHT, 75ms ACCESS
- ★ INCLUDES CONTROLLER, CABLES & INSTRUCTIONS FOR IBM

WIRELESS KEYBOARD $129

- ★ MADE BY CHERRY FOR IBM PC & PCjr
- ★ OPERATES UP TO 40 FEET FROM COMPUTER
- ★ INFRARED RECEIVER FOR PC/XT INCLUDED

HURRY—QUANTITIES ARE LIMITED!
SPECIALS END 9/30/86

PAGE WIRE WRAP WIRE

PRECUT ASSORTMENT
IN ASSORTED COLORS $27.50

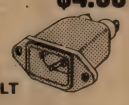
100ea: 5.5", 6.0", 6.5", 7.0"
250ea: 2.5", 4.5", 5.0"
500ea: 3.0", 3.5", 4.0"

SPOOLS

100 feet	$4.30	250 feet	$7.25
500 feet	$13.25	1000 feet	$21.95

Please specify color: Blue, Black, Yellow or Red

EMI FILTER $4.95



- ★ MANUFACTURED BY CORCOM
- ★ LOW COST
- ★ FITS LC-HP BELOW
- ★ 6 AMP 120/240 VOLT

6 FOOT LINE CORDS

LC-2	2 CONDUCTOR	.39
LC-3	3 CONDUCTOR	.99
LC-HP	3 CONDUCTOR W/STD FEMALE SOCKET	1.49

MUFFIN FANS

3.15" SQ.	ROTRON	14.95
3.63" SQ.	ETRI	14.95
3.18" SQ.	MASUSHITA	16.95

WIRE WRAP PROTOTYPE CARDS

FR-4 EPOXY GLASS LAMINATE
WITH GOLD-PLATED EDGE-CARD FINGERS

IBM-PR2

IBM

BOTH CARDS HAVE SILK SCREENED LEGENDS AND INCLUDES MOUNTING BRACKET

IBM-PR1	WITH +5V AND GROUND PLANE	$27.95
IBM-PR2	AS ABOVE WITH DECODING LAYOUT	$29.95

S-100

P100-1	BARE - NO FOIL PADS	$15.15
P100-2	HORIZONTAL BUS	$21.80
P100-3	VERTICAL BUS	$21.80
P100-4	SINGLE FOIL PADS PER HOLE	$22.75

APPLE

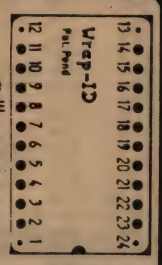
P500-1	BARE - NO FOIL PADS	$15.15
P500-3	HORIZONTAL BUS	$22.75
P500-4	SINGLE FOIL PADS PER HOLE	$21.80
7060-45	FOR APPLE IIe AUX SLOT	$30.00

SOCKET-WRAP I.D.™

- ★ SLIPS OVER WIRE WRAP PINS
- ★ IDENTIFIES PIN NUMBERS ON WRAP SIDE OF BOARD
- ★ CAN WRITE ON PLASTIC; SUCH AS IC #

PINS	PART#	PCK. OF	PRICE
8	IDWRAP 08	10	1.95
14	IDWRAP 14	10	1.95
16	IDWRAP 16	10	1.95
18	IDWRAP 18	5	1.95
20	IDWRAP 20	5	1.95
22	IDWRAP 22	5	1.95
24	IDWRAP 24	5	1.95
28	IDWRAP 28	5	1.95
40	IDWRAP 40	5	1.95

PLEASE ORDER BY NUMBER OF PACKAGES (PCK. OF)



ID WRAP 24

FRAME STYLE TRANSFORMERS

12.6V AC CT	2 AMP	5.95
12.6V AC CT	4 AMP	7.95
12.6V AC CT	8 AMP	10.95
25.2V AC CT	2 AMP	7.95

25 PIN D-SUB GENDER CHANGERS $7.95

SWITCHING POWER SUPPLIES

PS-IBM $69.95

- ★ FOR IBM PC-XT COMPATIBLE
- ★ 135 WATTS
- ★ +5V @ 15A, +12V @ 4.2A -5V @ .5A, -12V @ .5A
- ★ ONE YEAR WARRANTY

PS-IBM

PS-IBM-150 $79.95

- ★ FOR IBM PC-XT COMPATIBLE
- ★ 150 WATTS
- ★ +12V @ 5.2A, +5V @ 16A -12V @ .5A, -5V @ .5A
- ★ ONE YEAR WARRANTY

PS-130

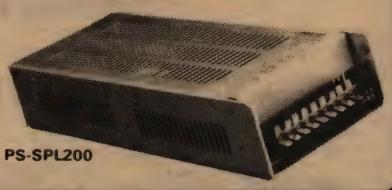
PS-130 $99.95

- ★ 130 WATTS
- ★ SWITCH ON REAR
- ★ FOR USE IN OTHER IBM TYPE MACHINES
- ★ 90 DAY WARRANTY

PS-A

PS-A $49.95

- ★ USE TO POWER APPLE TYPE SYSTEMS, 79.5 WATTS
- ★ +5V @ 7A, +12V @ 3A -5V @ .5A, -12V @ .5A
- ★ APPLE POWER CONNECTOR



PS-SPL200

PS-SPL200 $49.95

- ★ +5V @ 25A, +12V @ 3.5A -5V @ 1A, -12V @ 1A
- ★ UL APPROVED
- ★ ALUMINUM ENCLOSURE

CAPACITORS

TANTALUM

1.0µf	15V	.35	.47µf	35V	.45
6.8	15V	.70	1.0	35V	.45
10	15V	.80	2.2	35V	.65
22	15V	1.35	4.7	35V	.85
.22	35V	.40	10	35V	1.00

DISC

10pf	50V	.05	680	50V	.05
22	50V	.05	.001µf	50V	.05
27	50V	.05	.0022	50V	.05
33	50V	.05	.005	50V	.05
47	50V	.05	.01	50V	.07
68	50V	.05	.02	50V	.07
100	50V	.05	.05	50V	.07
220	50V	.05	.1	12V	.10
560	50V	.05	.1	50V	.12

MONOLITHIC

.01µf	50V	.14	.1µf	50V	.18
.047µf	50V	.15	.47µf	50V	.25

ELECTROLYTIC

RADIAL			AXIAL		
1µf	25V	.14	1µf	50V	.14
2.2	35V	.15	10	50V	.16
4.7	50V	.15	22	16V	.14
10	50V	.15	47	50V	.20
47	35V	.18	100	35V	.25
100	16V	.18	220	25V	.30
220	35V	.20	470	50V	.50
470	25V	.30	1000	16V	.60
2200	16V	.70	2200	16V	.70
4700	25V	1.45	4700	16V	1.25

DATARASE EPROM ERASER $34.95

- ★ ERASES 2 IN 10 MINUTES
- ★ COMPACT-NO DRAWER
- ★ THIN METAL SHUTTER PREVENTS UV LIGHT FROM ESCAPING

¼ WATT RESISTORS

5% CARBON FILM ALL STANDARD VALUES FROM 1 OHM TO 10 MEG. OHM

10 PCS	same value	.05	100 PCS	same value	.02
50 PCS	same value	.025	1000 PCS	same value	.015

RESISTOR NETWORKS

SIP	10 PIN	9 RESISTOR	.69
SIP	8 PIN	7 RESISTOR	.59
DIP	16 PIN	8 RESISTOR	1.09
DIP	16 PIN	15 RESISTOR	1.09
DIP	14 PIN	7 RESISTOR	.99
DIP	14 PIN	13 RESISTOR	.99

SPECIALS ON BYPASS CAPACITORS

.01 µf CERAMIC DISC	100/$5.00
.01 µf MONOLITHIC	100/$10.00
.1 µf CERAMIC DISC	100/$6.50
.1 µf MONOLITHIC	100/$12.50

BOOKS BY STEVE CIARCIA

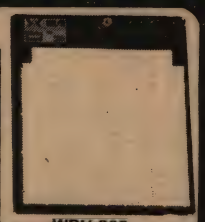
BIULD YOUR OWN Z80 COMPUTER	$19.95
CIRCUIT CELLAR VOL 1	$17.95
CIRCUIT CELLAR VOL 2	$18.95
CIRCUIT CELLAR VOL 3	$18.95
CIRCUIT CELLAR VOL 4	$18.95
CIRCUIT CELLAR VOL 5	$19.95

MICROCOMPUTER HARDWARE HANDBOOK FROM ELCOMP $14.95

OVER 800 PAGES OF DATA SHEETS ON THE MOST COMMONLY USED ICs. INCLUDES TTL, CMOS, 74LS00, MEMORY, CPUs, MPU SUPPORT. AND MUCH MORE!

WISH SOLDERLESS BREADBOARDS

PART NUMBER	DIMENSIONS	DISTRIBUTION STRIP(S)	TIE POINTS	TERMINAL STRIP(S)	TIE POINTS	BINDING POSTS	PRICE
WBU-D	.38 x 6.50"	1	100	---	---	---	2.95
WBU-T	1.38 x 6.50"	---	---	1	630	---	6.95
WBU-204-3	3.94 x 8.45"	1	100	2	1260	2	17.95
WBU-204	5.13 x 8.45"	4	400	2	1260	3	24.95
WBU-206	6.88 x 9.06"	5	500	3	1890	4	29.95
WBU-208	8.25 x 9.45"	7	700	4	2520	4	39.95



WBU-208

LITHIUM BATTERY

AS USED IN CLOCK CIRCUITS

3 VOLT BATTERY	$3.95
BATTERY HOLDER	$1.49

NEW EDITION!

1986 IC MASTER

THE INDUSTRY STANDARD

$129.95

VISIT OUR RETAIL STORE LOCATED AT 1256 SOUTH BASCOM AVENUE IN SAN JOSE

JDR Microdevices
1224 S. Bascom Avenue, San Jose, CA 95128
Toll Free 800-538-5000 • (408) 995-5430
FAX (408) 275-8415 • Telex 171-110

HOURS: M-W-F, 9-6 TU-TH, 9-9 SAT, 9-5

PLEASE USE YOUR CUSTOMER NUMBER WHEN ORDERING

TERMS: Minimum order $10.00. For shipping and handling include $2.50 for UPS Ground and $3.50 for UPS Air. Orders over 1 lb. and foreign orders may require additional shipping charges - please contact our sales department for the amount. CA residents must include applicable sales tax. All merchandise is warranted for 90 days unless otherwise stated. Prices are subject to change without notice. We are not responsible for typographical errors. We reserve the right to limit quantities and to substitute manufacturer. All merchandise subject to prior sale.

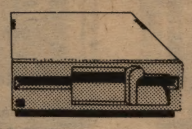
© COPYRIGHT 1986 JDR MICRODEVICES

THE JDR MICRODEVICES LOGO IS A REGISTERED TRADEMARK OF JDR MICRODEVICES. JDR INSTRUMENTS AND JDR MICRODEVICES ARE TRADEMARKS OF JDR MICRODEVICES. IBM IS A TRADEMARK OF INTERNATIONAL BUSINESS MACHINES. APPLE IS A TRADEMARK OF APPLE COMPUTER.

20MB HARD DISK SYSTEM ONLY $389.95!

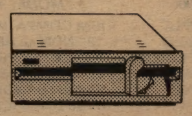
DISK DRIVES
FOR APPLE COMPUTERS

AP-150 $99.95



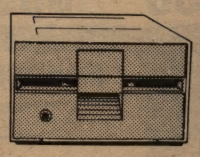
- ½ HT, DIRECT DRIVE
- 100% APPLE COMPATIBLE
- SIX MONTH WARRANTY

BAL-500 $129.95



- TEAC MECHANISM-DIRECT DRIVE
- 100% APPLE COMPATIBLE
- FULL ONE YEAR WARRANTY

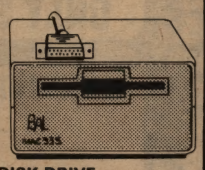
AP-135 $129.95



- FULL HT SHUGART MECHANISM
- DIRECT REPLACEMENT FOR APPLE DISK II
- SIX MONTH WARRANTY

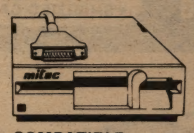
DOUBLE SIDED!

MAC535 $249.95



- 3.5" ADD-ON DISK DRIVE
- 100% MACINTOSH COMPATABLE
- DOUBLE SIDED 800K BYTE STORAGE
- HIGH RELIABILITY DRIVE HAS AUTO-EJECT MECHANISM
- FULL ONE YEAR WARRANTY

AD-3C $139.95



- 100% APPLE IIc COMPATIBLE, READY TO PLUG IN, W/SHIELDED CABLE & MOLDED 19 PIN CONNECTOR
- FAST, RELIABLE SLIMLINE DIRECT DRIVE
- SIX MONTH WARRANTY

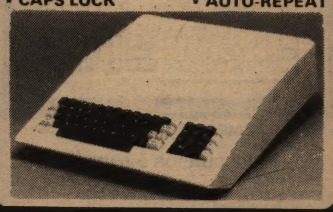
DISK DRIVE ACCESSORIES

FDD CONTROLLER CARD	$49.95
IIc ADAPTOR CABLE	$19.95

ADAPTS STANDARD APPLE DRIVES FOR USE WITH APPLE IIc

KB-1000 $79.95
CASE WITH KEYBOARD FOR APPLE TYPE MOTHERBOARD

- USER DEFINED FUNCTION KEYS
- NUMERIC KEYPAD WITH CURSOR CONTROL
- CAPS LOCK
- AUTO-REPEAT



KEYBOARD-AP $49.95

- REPLACEMENT FOR APPLE II KEYBOARD
- CAPS LOCK KEY, AUTO-REPEAT
- ONE KEY ENTRY OF BASIC OR CP/M COMMANDS

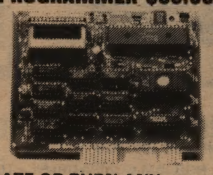
EXTENDER CARDS

IBM-PC	$45.00
IBM-AT	$68.00
APPLE II	$45.00
APPLE IIe	$45.00
MULTIBUS	$86.00

APPLE COMPATIBLE INTERFACE CARDS

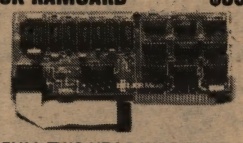
EPROM PROGRAMMER $59.95

MODEL RP525



- DUPLICATE OR BURN ANY STANDARD 27xx SERIES EPROM
- EASY TO USE MENU-DRIVEN SOFTWARE IS INCLUDED
- MENU SELECTION FOR 2716, 2732, 2732A, 2764 AND 27128
- HIGH SPEED WRITE ALGORITHM
- LED INDICATORS FOR ACTIVITY
- NO EXTERNAL POWER SUPPLY NEEDED
- ONE YEAR WARRANTY

16K RAMCARD $39.95



- FULL TWO YEAR WARRANTY
- EXPAND YOUR 48K APPLE TO 64K
- USE IN PLACE OF APPLE LANGUAGE CARD

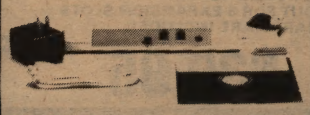
BARE PC CARD W/INSTRUCTIONS $9.95

IC TEST CARD $99.95

- QUICKLY TESTS MANY COMMON ICs
- DISPLAYS PASS OR FAIL
- ONE YEAR WARRANTY
- TESTS: 4000 SERIES CMOS, 74HC SERIES CMOS, 7400, 74LS, 74L, 74H & 74S

300B MODEM $49.95
FOR APPLE OR IBM

INCLUDES ASCII PRO-EZ SOFTWARE



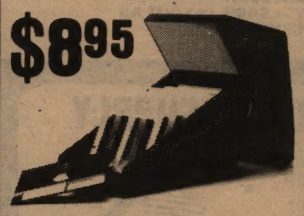
- FCC APPROVED
- BELL SYSTEMS 103 COMPATIBLE
- INCLUDES AC ADAPTOR
- AUTO-DIAL
- DIRECT CONNECT

CABLE FOR APPLE IIc $14.95

JOYSTICK CR-401 $7.95
FOR ATARI 400, 800, 2600, VIC 20/64 AND APPLE IIe

DISKFILE
HOLDS 70 5¼" DISKETTES

$8.95

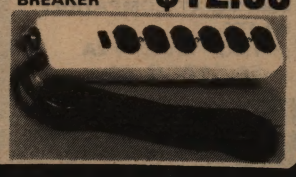


3.5" DISKFILE HOLDS 40 $9.95

POWER STRIP

- UL APPROVED
- 15A CIRCUIT BREAKER

$12.95



BAL 3-WAY SWITCH BOXES

- SERIAL OR PARALLEL
- CONNECTS 3 PRINTERS TO ONE COMPUTER OR VICE VERSA
- ALL LINES SWITCHES
- HIGH QUALITY ROTARY SWITCH MOUNTED ON PCB
- GOLD CONTACTS
- STURDY METAL ENCLOSURE

SWITCH-3P	CENTRONICS PARALLEL	$99.95
SWITCH-3S	RS232 SERIAL	$99.95

BAL PRINTER BUFFERS

- FREES COMPUTER FOR OTHER TASKS WHILE PRINTING LONG DOCUMENTS
- STAND-ALONE DESIGN; WORKS WITH ANY COMPUTER OR PRINTER
- ALL MODELS FEATURE PRINT PAUSE MEMORY CHECK, GRAPHICS CAPABILITY

SP120P PARALLEL $139.95

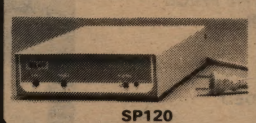
- 64K UPGRADABLE TO 256K
- LED INDICATOR SHOWS VOLUME OF DATA IN BUFFER

SP120S RS232 SERIAL $159.95

- 64K UPGRADABLE TO 256K
- 6 SELECTBALE BAUD RATES, FROM 600B—19,200B

SP110P PARALLEL $249.95

- 64K UPGRADABLE TO 512K
- SPOOLS OUTPUT OF UP TO 3 COMPUTERS
- LED BARGRAPH DISPLAYS AMOUNT OF DATA IN BUFFER
- RESET FUNCTION CLEARS DATA IN BUFFER
- REPEAT FUNCTION CAN PRODUCE MULTIPLE COPIES OF A DOCUMENT



SP120 SP110

NASHUA DISKETTES DEALS
5¼" SOFT SECTOR DS/DD WITH HUB RINGS

$9.90	69¢ea	59¢ea
BOX OF 10	BULK QTY 50	BULK QTY 250

NASHUA DISKETTES WERE JUDGED TO HAVE THE HIGHEST POLISH AND RECORDED AMPLITUDE OF ANY DISKETTES TESTED ACCORDING TO "COMPARING FLOPPY DISKS", BYTE 9/84

DISKETTES

NASHUA 5¼"

N-MD2D	DS/DD SOFT	$9.90
N-MD2F	DS/QUAD SOFT	$34.95
N-MD2H	DS/HD FOR AT	$49.95

NASHUA 8"

N-FD1	SS/DD SOFT	$27.95
N-FD2D	DS/DD SOFT	$34.95

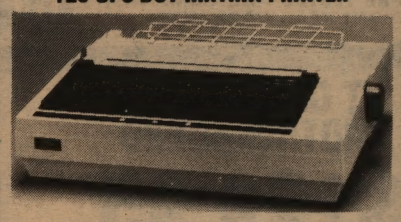
NASHUA 3.5"

N-3.5SS	3.5" SS/DD FOR MAC	$32.95

VERBATIM 5¼"

V-MD1D	SS/DD SOFT	$23.95
V-MD2D	DS/DD SOFT	$29.95
V-MD110D	SS/DD 10 SECTOR HARD	$23.95

Sakata
120 CPS DOT MATRIX PRINTER



MODEL SP-1200 **$169.95**

- EPSON/IBM COMPATIBLE
- 9-WIRE PRINTHEAD
- 120 CPS-BIDIRECTIONAL, 80 COL.
- FRICTION AND TRACTOR FEED
- PROPORTIONAL SPACING
- CENTRONICS PARALLEL INTERFACE
- 8 CHARACTER SETS AND GRAPHICS

6 FOOT IBM PRINTER CABLE	*$9.95*
REPLACEMENT RIBBON CARTRIDGE	*$11.95*

5¼" FLOPPY DISK DRIVES

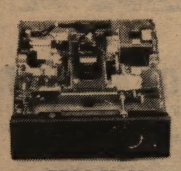
TEAC FD-55B ½ HT DS/DD (FOR IBM)	$109.95
TEAC FD-55F ½ HT DS/QUAD (FOR IBM)	$124.95
TEAC FD-55GFV ½ HT DS/HD (FOR IBM AT)	$154.95
TANDON TM100-2 DS/DD (FOR IBM)	$119.00
TANDON TM50-2 ½ HT DS/DD (FOR IBM)	$79.95
MPI-B52 DS/DD (FOR IBM)	$79.95
QUME QT-142 ½ HT DS/DD (FOR IBM)	$79.95

8" FLOPPY DISK DRIVES

FD 100-8 SS/DD (SA/801 EQUIV)	$119.00
FD 200-8 DS/DD (SA/851R EQUIV)	$159.00

DISK DRIVE ACCESSORIES

TEAC SPECIFICATION MANUAL	$5.00
TEAC MAINTENANCE MANUAL	$25.00
½ HT MOUNTING HARDWARE	$2.95
MOUNTING RAILS FOR IBM AT	$4.95
"Y" POWER CABLE FOR 5¼" FDDs	$2.95
5¼" FDD POWER CONNECTORS	$1.19



TEAC FD-55

TANDON TM100-2

DISK DRIVE ENCLOSURES

CAB-APPLE $24.95
APPLE TYPE CABINET W/OUT POWER SUPPLY

CAB-1FH5 $69.95
FULL HT 5¼" BEIGE CABINET W/POWER SUPPLY

CAB-2SV5 $49.95
DUAL SLIMLINE 5¼" CABINET W/POWER SUPPLY

CAB-2SV8 VERTICAL **$209.95**
DUAL SLIMLINE 8" CABINET W/POWER SUPPLY

CAB-2FH8 HORIZINTAL **$219.95**
DUAL FULL HT 8" CABINET W/POWER SUPPLY

CAB-2SV5

CAB-1FH5

TEST EQUIPMENT FROM JDR INSTRUMENTS

DIGITAL MULTIMETER PEN DPM-1000 $54.95
AUTO RANGING, POLARITY AND DECIMAL!

- LARGE 3.5 DIGIT DISPLAY
- DATA HOLD SWITCH FREEZES READING
- FAST, AUDIBLE CONTINUITY TEST
- LOW BATTERY INDICATOR
- OVERLOAD PROTECTION

20MHz DUAL TRACE OSCILLOSCOPE	MODEL 2000	$389.00
35MHz DUAL TRACE OSCILLOSCOPE	MODEL 3500	$549.00

FOR MORE INFORMATION ON THE OSCILLOSCOPES, CALL US FOR FREE PRODUCT BRIEFS.

CALL FOR VOLUME QUOTES

© COPYRIGHT 1986 JDR MICRODEVICES

20 MEGA BYTE HARD DISK SYSTEM ONLY $389.95!

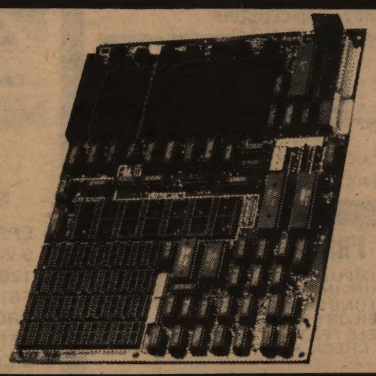
SEAGATE ST-225 20 MB HARD DISK SYSTEM

INCLUDES HARD DISK CONTROLLER, CABLES AND INSTRUCTIONS. ALL DRIVES ARE PRE-TESTED AND COME WITH A ONE YEAR WARRANTY.

$389.95

XT COMPATIBLE MOTHERBOARD

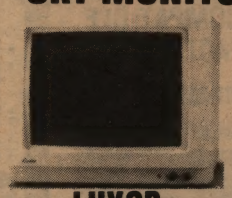
$129.95



- 4.77 MHz 8088 CPU, OPTIONAL 8087 CO-PROCESSOR
- 8 EXPANSION SLOTS
- 0K RAM INSTALLED, EXPANDABLE TO 640K ON-BOARD MEMORY
- ALL ICs SOCKETED-HIGHEST QUALITY PC BOARD
- ACCEPTS 2764 OR 27128 ROMS

PRO-BIOS $19.95

CRT MONITORS FOR ALL APPLICATIONS



LUXOR
HI-RES RGB MONITOR
MODEL 190-9528

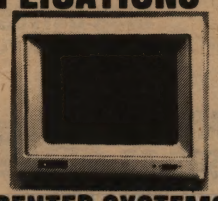
- DIGITAL RGB-IBM COMPATIBLE
- 14" SCREEN
- 16 TRUE COLORS
- 25 MHz BANDWIDTH
- RESOLUTION > 640 x 262
- .31mm DOT PITCH
- CABLE FOR IBM PC INCLUDED

$299.95

SAKATA
COMPOSITE COLOR
MODEL SC-100

- TOP RATED FOR APPLE
- 13" COMPOSITE VIDEO
- RESOLUTION: 280H x 300V
- INTERNAL AUDIO AMP
- ONE YEAR WARRANTY

$169.95



CENTER SYSTEMS
MONOCHROME
MODEL KLM-1211

- IBM COMPATIBLE TTL INPUT
- 12" NON-GLARE SCREEN
- P39 GREEN PHOSPHORUS
- VERY HIGH RESOLUTION: 25 MHz BANDWIDTH 1100 LINES (CENTER)

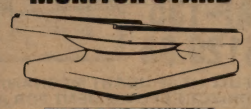
AMBER VERSION $109.95

$99.95

BUILD YOUR OWN 256K XT COMPATIBLE SYSTEM

XT MOTHERBOARD	$129.95
PRO-BIOS	$19.95
256K RAM	$26.55
130 WATT POWER SUPPLY	$69.95
FLIP-TOP CASE	$39.95
DKM-2000 KEYBOARD	$59.95
½ HEIGHT QUME DRIVE	$79.95
FLOPPY DISK CONTROLLER	$34.95
MONOCHROME ADAPTOR	$49.95
MONOCHROME MONITOR	$99.95
TOTAL:	$811.10

MONITOR STAND



TILTS AND SWIVELS

ONLY $12.95

IBM PRINTER CABLE

- DB25 TO CENTRONICS
- SHIELDED CABLE

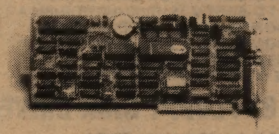
$9.95

IBM COMPATIBLE INTERFACE CARDS

ALL WITH A ONE YEAR WARRANTY

MULTI I/O FLOPPY CARD $89.95

PERFECT FOR THE 640K MOTHERBOARD



- 2 DRIVE FLOPPY DISK CONTROLLER
- 1 RS232 SERIAL PORT; OPTIONAL 2nd SERIAL PORT
- PARALLEL PRINTER PORT
- GAME PORT
- CLOCK/CALENDAR
- SOFTWARE: CLOCK UTILITIES, RAMDISK, SPOOLER

OPTIONAL SERIAL PORT $15.95

MULTIFUNCTION CARD $84.95

ALL THE FEATURES OF AST'S 6 PACK PLUS AT HALF THE PRICE

- CLOCK/CALENDAR
- 0-384K RAM
- SERIAL PORT
- PARALLEL PORT
- GAME PORT
- SOFTWARE INCLUDED

PRINTER CABLE $9.95
64K RAM UPGRADE 9/$11.61

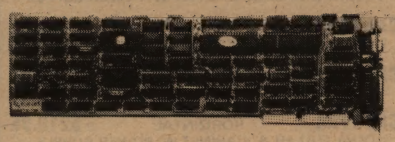
COLOR GRAPHICS ADAPTOR $69.95

FULLY COMPATIBLE WITH IBM COLOR CARD

- 4 VIDEO INTERFACES: RGB, COMPOSITE COLOR, HI-RES COMPOSITE MONOCHROME, CONNECTOR FOR RF MODULATOR
- COLOR GRAPHICS MODE: 320 x 200
- MONO GRAPHICS MODE: 640 x 200
- LIGHT PEN INTERFACE

MONOCHROME GRAPHICS CARD $89.95

FULLY COMPATIBLE W/IBM MONOCHROME ADAPTOR & HERCULES GRAPHICS



- LOTUS COMPATIBLE
- TEXT MODE: 80 x 25
- GRAPHICS MODE: 720 x 348
- PARALLEL PRINTER INTERFACE

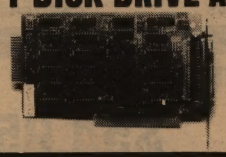
MONOCHROME ADAPTOR $49.95

ANOTHER FANTASTIC VALUE FROM JDR!

- IBM COMPATIBLE TTL OUTPUT
- 720 x 350 PIXEL DIPLAY

PLEASE NOTE: THIS CARD WILL NOT RUN LOTUS GRAPHICS AND DOES NOT INCLUDE A PARALLEL PORT

FLOPPY DISK DRIVE ADAPTOR $34.95



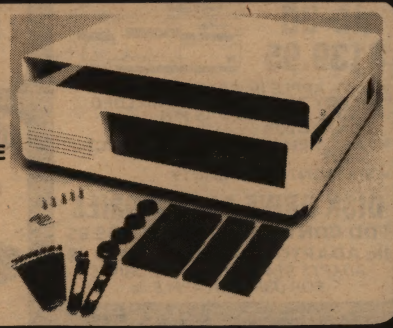
- INTERFACES UP TO 4 STANDARD FDDs TO IBM PC OR COMPATIBLES
- INCLUDES CABLE FOR TWO INTERNAL DRIVES
- STANDARD DB37 FOR EXTERNAL DRIVES
- RUNS QUAD DENSITY DRIVES WHEN USED WITH JFORMAT

IBM STYLE COMPUTER CASE

AN ATTRACTIVE STEEL CASE WITH A HINGED LID FITS THE POPULAR PC/XT COMPATIBLE MOTHERBOARDS

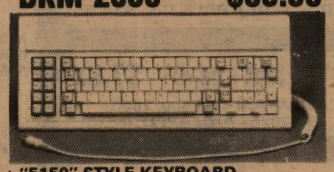
- SWITCH CUT-OUT ON SIDE FOR PC/XT STYLE POWER SUPPLY
- CUT-OUT FOR 8 EXPANSION SLOTS
- ALL HARDWARE INCLUDED

$39.95



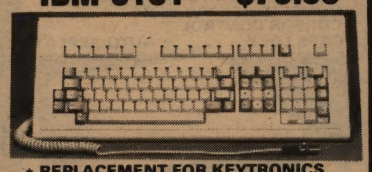
IBM COMPATIBLE KEYBOARDS

DKM-2000 $59.95



- "5150" STYLE KEYBOARD
- FULLY IBM COMPATIBLE
- LED STATUS INDICATORS FOR CAPS & NUMBER LOCK
- 83 KEY — SAME LAYOUT AS IBM PC/XT KEYBOARD

IBM-5151 $79.95



- REPLACEMENT FOR KEYTRONICS KB-5151™
- SEPARATE CURSOR & NUMERIC KEYPAD
- CAPS LOCK & NUMBER LOCK INDICATORS
- IMPROVED KEYBOARD LAYOUT

1200 BAUD MODEMS

HAYES COMPATIBLE, AUTO-DIAL, AUTO-ANSWER, AUTO RE-DIAL ON BUSY, POWER-UP SELF TEST, FULL ONE YEAR WARRANTY

MODEL 1200B*
- INTERNAL DESIGN
- 10 INCH CARD
- SERIAL PORT INCLUDED

$169.95

MODEL 1200H*
- INTERNAL DESIGN
- HALF LENGTH (5") CARD
- INCLUDES SPEAKER

$149.95

SMARTEAM
- EXTERNAL DESIGN
- WITH POWER SUPPLY
- LED STATUS INDICATORS

$169.95

*FOR IBM, INCLUDES PC TALK III COMMUNICATIONS SOFTWARE

POWER SUPPLY

NOW ONLY $69.95

- FOR IBM PC-XT COMPATIBLE
- 135 WATTS
- +5V @ 15A, +12V @ 4.2A -5V @ .5A, -12V @ .5A

150 WATT MODEL $79.95

DISK DRIVES
TANDON TM50-2

$79.95

- ½ HT DS/DD
- IBM COMPATIBLE
- EXTREMELY QUIET!

TEAC FD-55B	DS/DD	$109.95
TEAC FD-55F	DS/QUAD	$124.95
TEAC FD-55G	DS/HD	$154.95
QUME QT-142	DS/DD	$79.95
MOUNTING HARDWARE		$2.95
AT/RAILS		$4.95

JDR Microdevices 1224 S. Bascom Avenue, San Jose, CA 95128
Toll Free 800-538-5000 • (408) 995-5430 • FAX (408) 275-8415 • Telex 171-110

© COPYRIGHT 1986 JDR MICRODEVICES

$399.00

IBM® PC/XT COMPATIBLE

BASE SYSTEM

- FCC Approved slide case
- 135 Watt power supply
- 256K on motherboard
- AT Type keyboard
- 8 Expansion slots
- Intel 8088 microprocessor
- Manual

ADD-ONS

Floppy drive controller	$ 44.95
Teac floppy drive	$ 89.00
Mono video card Hercules compatible	$ 85.00
Monochrome	$ 89.00
TTL monitor	$ 84.00
Color video card	$ 89.00
Color monitor	$289.00
Expand 256 to 640K	$ 45.00
Seagate 20 Meg hard drive	$399.00
V-20 chip	$ 14.95
ITT DOS	$ 50.00

$399.00

FULLY IBM COMPATIBLE

Runs all popular software written for the IBM PC -LOTUS 123, WORDSTAR, etc.

CALL TOLL FREE

7 to 7 Central Time 10 to 3 Saturdays

1 800 USA-FLEX

1-800-872-3539

IN ILLINOIS 1 800 FOR FLEX (1 800 367-3539)

Shipping/handling additional. Minimum order $50.00. Visa, MasterCard and Prepaid orders accepted. Corporations rated 3A2 or better and government accounts are accepted on a net 30 basis. C.O.D. orders add an additional $5.00 special handling charge. APO, FPO, AK, HI & PR orders add an additional 5% to the total order amount to cover PAL and insurance. No sales tax outside of Illinois.

USA FLEX

135 North Brandon Drive, Glendale Heights, IL 60139

COMPUTING POWER

FROM FLOPPY DISK SERVICES

PRICES AND SPECS SUBJECT TO CHANGE WITHOUT NOTICE.

Floppy Disk Services has been supplying storage systems to the hobby and professional computer community for 7 years now. You can buy with confidence from a supplier that is in for the long haul. Whether you need advice or technical help, our staff is here to serve you.

The 'Service' in Floppy Disk Services stands for the confidence you'll have in dealing with us. We do not make you wait when a problem comes up. We will be there to help, and more importantly support and guide you. In the unlikely event we cannot answer your questions, a staff member will return a call to you in a timely and professional manner with the answer.

Warranty is a term that sometimes is taken for granted. At Floppy Disk Services, we support one of the strongest warranty policies in the business. Our policy is to replace any equipment found to be defective in any way during the warranty period. Its as simple as that! No waiting for the merchandise to be sent back to the factory. If we find a problem, (other than abuse), we simply ship a new unit back to you.

The XT-clone system pictured above is our Super System VII XT clone. It contains a turbo processor, a 20mb hard disk formatted RLL to 31mb, 640K RAM, two 360K floppies, 1 AT 1.2 mb drive, mono amber monitor, par port, ser port, clock and AT type keyboard! You might expect to pay thousands for this system, but Floppy Disk Services, inc. will supply it ready to run with a 1 year warranty. Call for latest quotes on your custom system needs. . .

Complete line of drive enclosures

800-223-0306

CALL FOR FREE CATALOG

Dealer Inquiries Invited

VISA MasterCard

39 Everett Dr., Bldg. D Lawrenceville, NJ 08648

(609) 799-4440

FLOPPY DISK SERVICES INC